October, 1925

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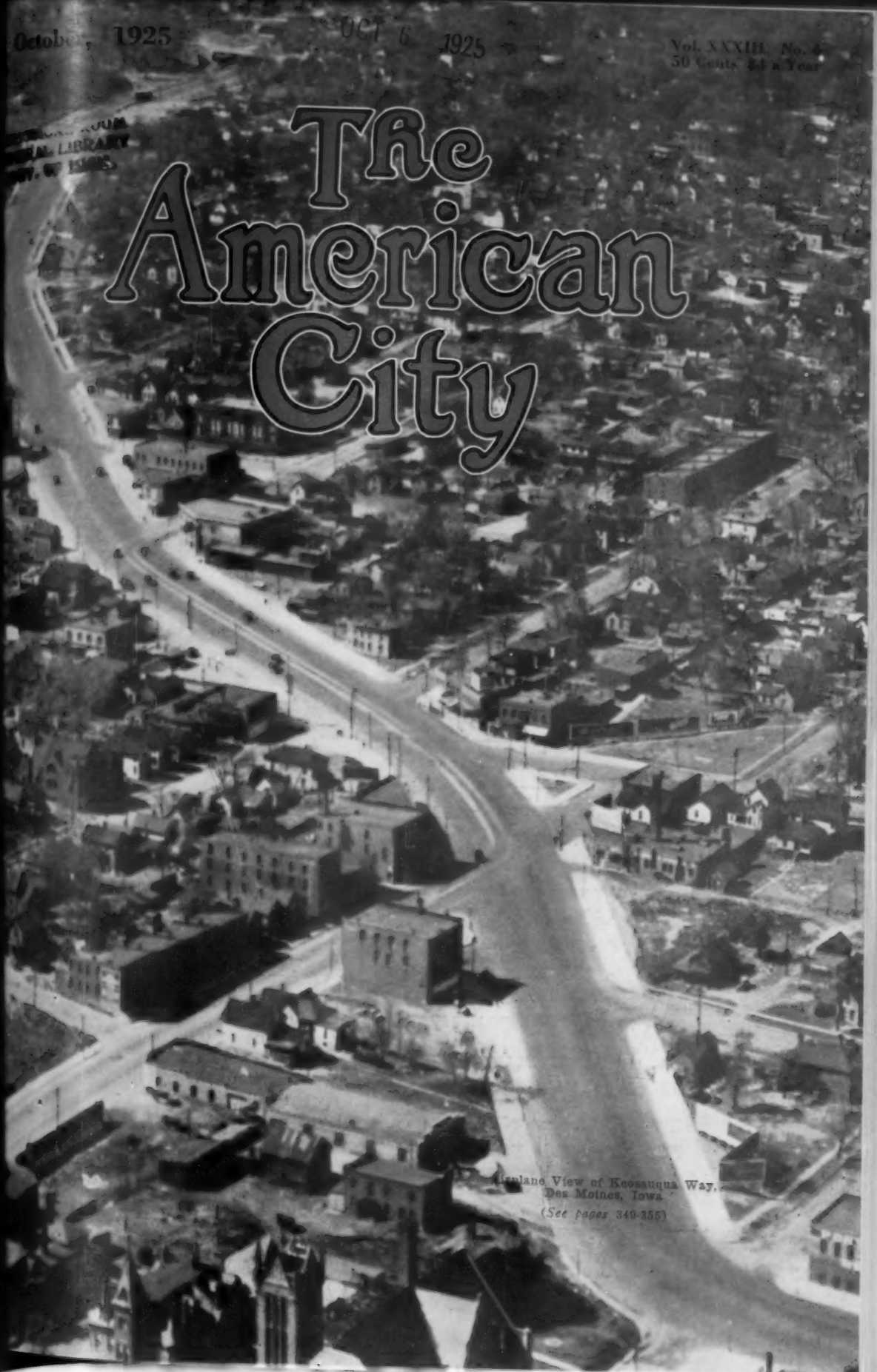
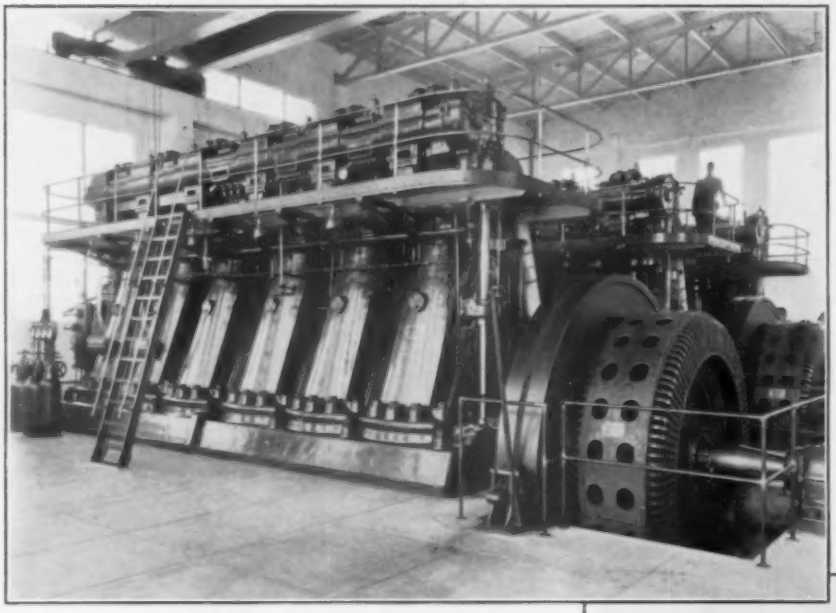


Airplane View of Keosauqua Way, Des Moines, Iowa

(See pages 349-355)

FULTON DIESEL



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The American City Magazine

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Comprehensive City Planning Follows Piecemeal Progress in Des Moines

By James B. Weaver

Member Town Planning Commission, Des Moines, Ia.

EVERY city in the land owes much, along the line of its development, to those isolated, independent, and courageous thinkers who from year to year undertook this or that project and fought for its consummation. They were like skirmishers back of whom in those first days no solid armies waited to march to victory. They fought alone, not always wisely, it is true, here victorious, there going down to defeat; here achieving a park, a plaza, or a widened street, there ridiculed by a jealous, prejudiced and uninformed electorate. Civic unity was lacking almost everywhere. Towns grew into cities, cities into great populous centers, by a thousand isolated moves, without unity of purpose or plan, and, of course, with no common prescience of the insistent demands about to be made as a result of advance of science, transportation, and great industrial centers. Even after giving credit for isolated improvement of great merit, the mistakes and economic loss due to this lack of unity and of an aroused public opinion are, of course, immeasurable.

Such special measure of unity of effort as Des Moines has realized in the last fifteen years has been due, probably more than to any other cause, to the existence of a central group of citizens, originally known as the Civic Improvement Committee, with a city-wide vision, for the origination and dissemination of plans for improvement. In May, 1916, the City Council did this group the honor to give it an official status by the enactment of an ordinance creating a

The City Plan and Community Consciousness

The accompanying article has special timeliness because of the annual convention, which is to be held in Des Moines this month, of the American Society for Municipal Improvements. In a paper presented by Mr. Weaver before the 1925 National Conference on City Planning, in New York, from which most of this article has been compiled, the author mentions some of the civic forces which have been responsible in Des Moines for the growth of sentiment favorable to city planning. Important among these was the adoption, in 1908, of the commission form of government; for the wide-spread discussion and enthusiasm aroused by this step greatly stimulated local pride and cleared the stage for further cooperation in civic matters.

In concluding his convention address, Mr. Weaver compared Old World and New World methods of city development, and said:

"Profiting by the experience of the Old World, and touched by the spirit of the Renaissance, which is immortal and belongs to the race, may we not rebuild our American cities, fusing the eagerness of that great period with the daring and initiative of the Twentieth Century?

"And there are signs that this is exactly what is taking place. We are fast acquiring the technique and the trained leaders. A hunger for civic beauty is permeating the nation. A deeper purpose and determination are abroad in American cities. The conviction is spreading in all ranks that civic beauty is a cause of infinite importance, to which men and women may worthily dedicate their lives and fortunes, as to a great public service."

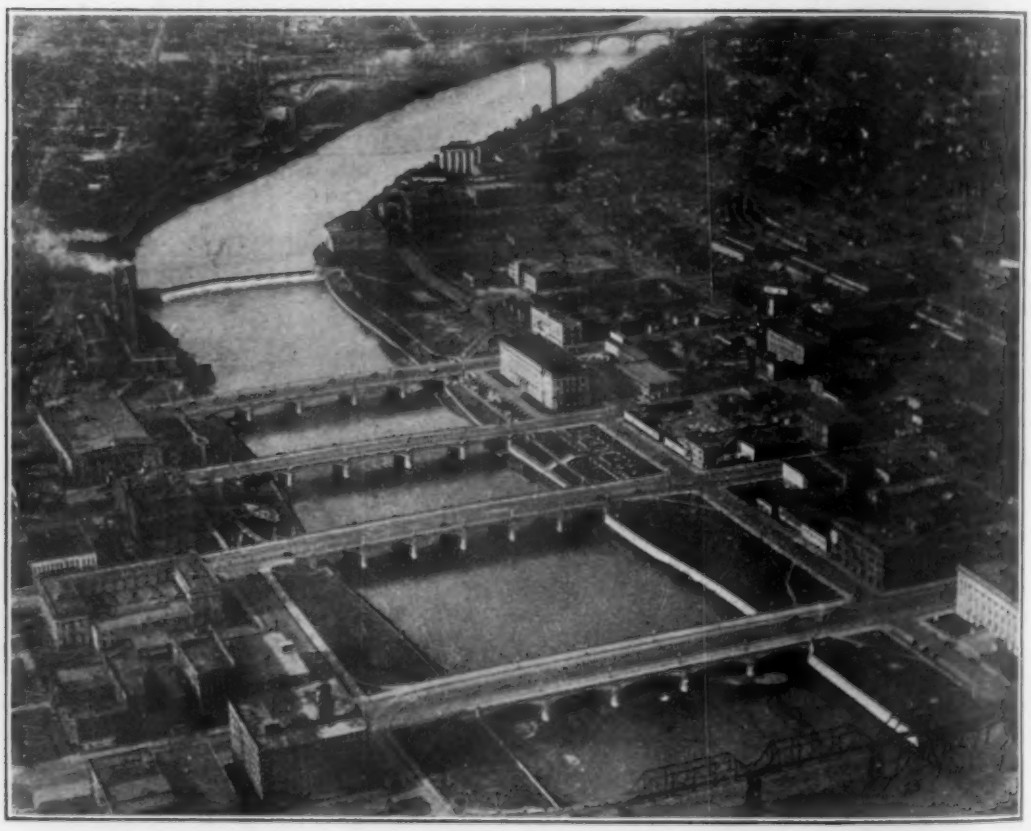
Town Planning Commission of fifteen members and naming as such Commission the fifteen persons then composing the preexisting voluntary committee. The members serve without pay. Under various names, in their unofficial and official capacities, they have met at luncheon, practically without variation, weekly or bi-weekly now for seventeen years.

This Commission and the committee which preceded it have had an important relation to every major project and almost endless minor proposals inaugurated since its formation. Many of them it has itself originated, but it has, of course, always championed proposals of whatever origin if consistent with the city's best interests in the judgment of the Commission.

Among other things achieved by the city in recent years may be mentioned the following: the planning and completion in part of an extensive system of boulevards; the widening of Grand Avenue (extending clear across the city from east to west) to 80 feet; the lowering of the grade and widening of 5th and 9th Streets and 6th Avenue adjacent to the business district; the widening of University Avenue; the construction of 7th Street viaduct; the development of the Civic Center; the opening of Keosauqua Way; the establishment of Frederick Hubbell Boulevard; the acquiring of additional park areas, etc. Some of these projects deserve special mention.

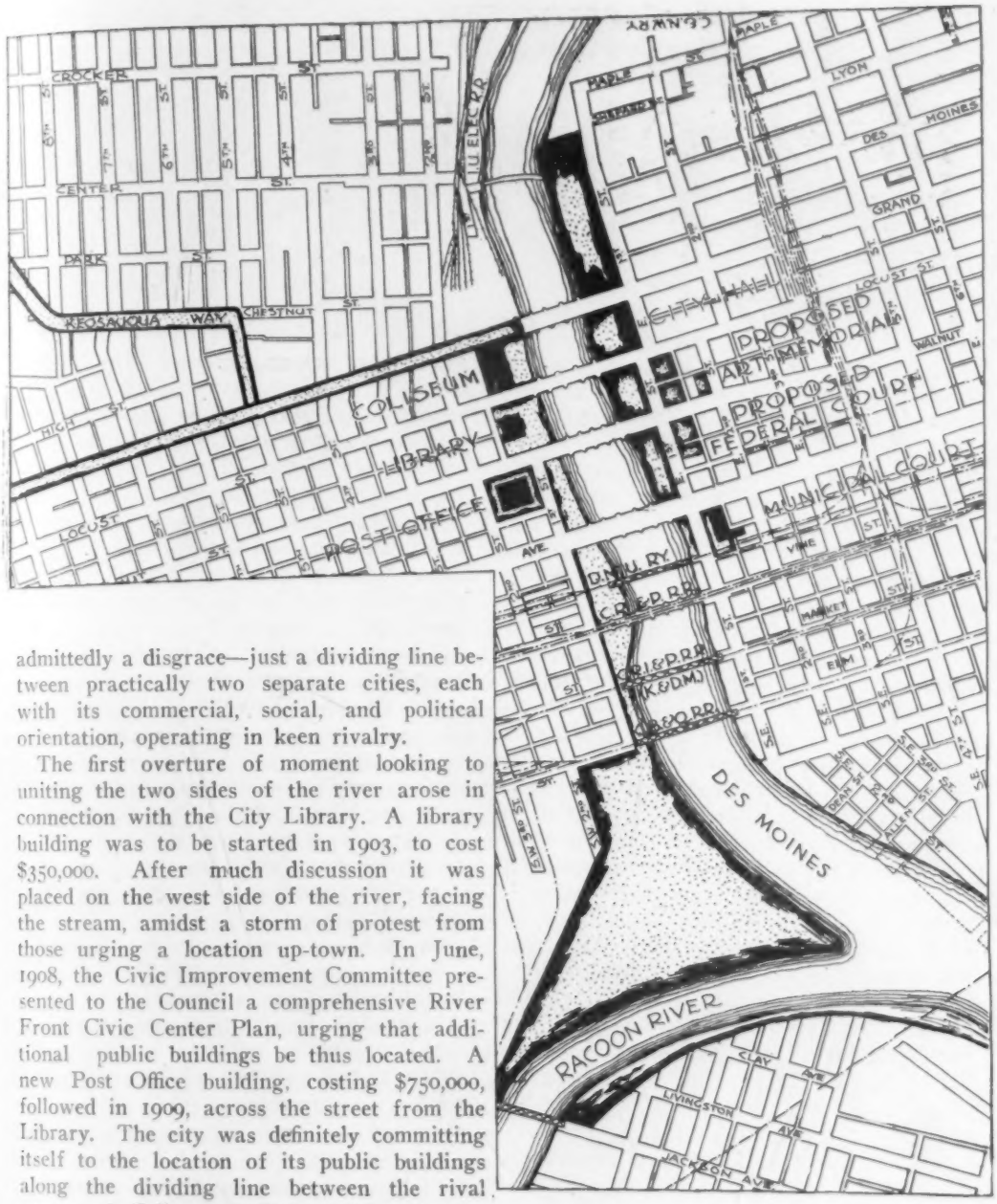
The Civic Center

The Des Moines River bisects the city. In pioneer days business flourished along the river-front. With the coming of the railroad, development went farther inland on both sides of the river. The water-front became veritably a dumping-ground, a location for junk dealers, livery stables, dilapidated shacks, willow thickets, sand-bars, billboards and rickety old-time bridges. It was



PARTIAL VIEW OF THE CIVIC CENTER IN DES MOINES

What was once an offensive area in the heart of the city has been transformed by retaining-walls, parking, fine bridges, and landscaping into a setting for the city's public buildings. On the left bank are the Municipal Building and the Central Police and Municipal Courts Building and between these the sites for the Federal Court Building and the Art Gallery and Art Institute



admittedly a disgrace—just a dividing line between practically two separate cities, each with its commercial, social, and political orientation, operating in keen rivalry.

The first overture of moment looking to uniting the two sides of the river arose in connection with the City Library. A library building was to be started in 1903, to cost $350,000. After much discussion it was placed on the west side of the river, facing the stream, amidst a storm of protest from those urging a location up-town. In June, 1908, the Civic Improvement Committee presented to the Council a comprehensive River Front Civic Center Plan, urging that additional public buildings be thus located. A new Post Office building, costing $750,000, followed in 1909, across the street from the Library. The city was definitely committing itself to the location of its public buildings along the dividing line between the rival camps. A Coliseum, built by public subscription, was completed in 1910, with a seating capacity of 7,000.

Constant agitation by the Civic Improvement Committee, the commercial organizations, and civic clubs, resulted in a small annual tax to be devoted to acquiring the ground between First Street and the water's edge on both sides of the river. At about this juncture (1909) Charles Mulford Robinson, on the initiative of the Women's Club, and on request of the Council, was brought to the city to advise with a view to the comprehensive development of the proposed Civic Center. His report made a strong impression. The year 1911 saw the completion of a new City Hall, at a cost of $350,000, a very handsome structure on the east bank of the river.

Public opinion was further aroused by these tangible proofs of the possibilities. Condemnation proceeded steadily, year by year, to acquire and develop the areas along the waterfront for a distance of six blocks on both banks. In 1918 a very beautiful building was

THE APPROACH TO THE STATE HOUSE, DES MOINES

erected on the east bank of the river for the Municipal Courts and Central Police Station, at a cost of about $450,000. A block has been condemned for a site for an Art Gallery and Art Institute, a magnificent gift which the city has every reason to believe is coming through the generosity of one of its leading capitalists.

As early as October, 1910, the Town Planning Commission urged that the course of the Racoon River be changed near its mouth, and the land between the new and the old bed conveyed by the state to the city. Here a disreputable area of thirty acres, devoted since 1845 to abject hovels and ground for dumping refuse, is to become a fine park at the south end of the Civic Center and within ten minutes' walk of the main business district. Four splendid ornamental bridges of stone and concrete, handsomely lighted, and of full street width, have replaced the pioneer structures at a cost of about $680,000.

There has been spent in all on the Civic Center about $4,000,000 in acquiring land and in the erection of bridges, retaining walls, and buildings. The Art Gallery and Federal Building are yet to be erected, but the sites are waiting. The areas adjacent have to a large degree recovered their commercial self-respect. The physical change wrought has made a powerful appeal to the pride of Des Moines. It has stimulated other plans. The Civic Center has had a definite spiritual reaction, the unification of the city, through the transformation of a disgraceful dumping-ground and sinister dividing line into a central area of great beauty and practical utility. The citizens of Des Moines and her public officials look forward unitedly and with eager pride to the full fruition of their plans.

Keosauqua Way

In 1916 in the center of the city and at the northwest corner of the central business district was an area about eight blocks in width and a mile long, difficult of access, and full of dead-end streets and inferior buildings. Through the heart of this district ran diagonally in earlier years a ravine known as Bird's Run. For fifty years this ravine was just a dumping-ground. A large storm sewer was constructed twenty-five years ago down its full length, the ravine filled, and the area thus created in the various blocks occupied by cheap wooden buildings, mainly residences.

The fine grade presented by the site of the ravine, its diagonal course leading from the rapidly-growing residence district in the northwest straight to the heart of the business district, early suggested to the minds of many persons that it should some day be occupied for street purposes. In October, 1916, the Town Planning Commission took definite action. It adopted and sent to the City Council a resolution urging the location through the entire length of the valley of a traffic way 100 feet in width. The Council approved the project, increased the width to 110 feet, created a benefited district to bear the cost, and proceeded with condemnation of the right of way.

Following the plan to designate the city's boulevards by famous Indian names connected with Iowa history, the new street is called Keosauqua Way. The cost, about $900,000, assessed to a large area, has not been burdensome and has resulted in few appeals. Keosauqua Way has been completed a little over one year and already bears probably the heaviest traffic, with one exception, of any street in the city. The paved width between the curbs is 78 feet. It shortens the distance from the business district to Drake University and the large and rapidly growing residential area to the northwest three-quarters of a mile. It required eight years of per-

sistent effort to consummate this obviously desirable project. Scattered through those eight years were many tense periods of active opposition, with flaming posters and much political pressure. To-day this fine traffic way is transforming adjacent areas and has overwhelmingly justified itself in popular opinion as one of the most notable pieces of planning in the city's history. (See front cover.)

What Two Citizens Have Done for Des Moines

Frederick Hubbell Boulevard.—A striking instance of individual initiative for the public good is a boulevard project inaugurated and financed entirely by one of the city's most prominent citizens, Frederick M. Hubbell. Coming to the state a poor Connecticut boy more than 70 years ago, Mr. Hubbell is now credited with being the state's most wealthy citizen. As the revolution in transportation developed through the motor vehicle, with true Connecticut horror of waste he conceived the idea of establishing *at his own expense* a diagonal thoroughfare to the city limits and beyond in a northeasterly direction. He had a preliminary survey made in 1908. Slowly but steadily, by purchase or condemnation, Mr. Hubbell has been pushing this project to completion. With the exception of one or two small pieces, acquired by the city, he has paid for the entire road which bears his name. He has expended about $95,000 to date; and though he has reached the city limits and is 86 years of age, he is still pushing for an extension through the farms outside the city and toward Marshalltown. Asked recently whether he had been back to the old Connecticut home in recent years, he answered, "No, but I'm on my way."

Ashworth Park.—In the summer of 1851 Richard Ashworth, with his family and a company of his relatives, thirteen in all, came by water and ox-team from Vermont to Des Moines and settled on a tract five miles west of the village. Among other tracts acquired was eighty acres of native white oak timber, paid for by $500 in gold carried by Mary Ashworth, the wife of Richard, in a belt about her waist, all the way from Vermont. One of her sons, Charles, a bachelor, then a boy of three years, survives now, 77 years of age. Last year he gave what is left of this tract, 65 acres, to the city for a park. This beautifully wooded land, of great value, is located in a handsome residential district. One of the conditions of the gift is the erection by the city of a fine swimming pool, which has been built this year. May we not believe that the congenial atmosphere of city planning has had its part in prompting the gift to the city for all time of this splendid park area?

Special Uses of Some of the Parks

The city was deficient in down-town parks. The Civic Center, with both banks of the river parked and the park at the mouth of the Racoon River, greatly improves the situation. The outlying park system comprises about 1,000 acres, well distributed, and includes two municipal golf-links, in addition to which there are three handsome courses belonging to private clubs.

Certain special uses are made of some of the parks, which may be of interest. In Waveland, one of the larger parks, the city has erected a handsome municipal observatory building with lecture room. Here are installed by Drake University its telescope and equipment. There is on exhibition, three days a week, a fine collection of stellar photographs; and each week Dean Moorehouse gives illustrated lectures on astronomy to classes and to school children and the public generally. The city furnishes the building, and the University the equipment and maintenance. The observatory is very popular with the public.

In another park the city granted the Des

UNIVERSITY AVENUE BRIDGE, DES MOINES

Moines Women's Club a lease for 99 years on a fine pioneer residence located in the park. This the club has remodeled at a cost of about $200,000 to embrace club rooms, a club art gallery, and a fine auditorium. Here is the center of activity of the women's organizations of the city.

A Comprehensive Plan for Des Moines

I have mentioned only a few of the accomplishments of the last fifteen years. There have been others of great moment. But, however commendable were individual projects, the Town Planning Commission has been restive, especially in the last five years. I can use no more fit term. The city was undertaking fine projects *in spots*, but coordination was lacking.

The city's area is 9 miles by 6. Its population grew 46 per cent in the decade 1910-20. The total is to-day over 140,000, nearer 150,000, if there is included territory separately incorporated but contiguous and essentially a part of the city's life. The improved area has been rapidly extending in new plats with pressing problems of connecting streets, park areas, etc., unsolved. Sites demanding special treatment in the way of boulevards, parks, playgrounds, etc., were being cut up with little regard for coordination or for relation to a city-wide plan. Expensive structures were being erected on streets that demand widening. Factories and stores were invading residence districts. Zoning and a comprehensive plan were the crying needs.

The statutes of the state made no provision for zoning. The Commission set about pro curing the necessary legislation, and was successful in April, 1923.

The same month the Chamber of Commerce took action that was of great help. A Program of Work was developed under a plan similar to that which has been installed in many cities by the American City Bureau. The membership of the Chamber, numbering 2,250, was divided into 25 groups, each embracing about 100 persons. Each group was called into conference, a director of the Chamber presiding, and each person was asked to express himself in answer to two questions:

1. *What, in your opinion as a citizen, is the thing of first importance to be done by the Chamber of Commerce for the community as a whole?*

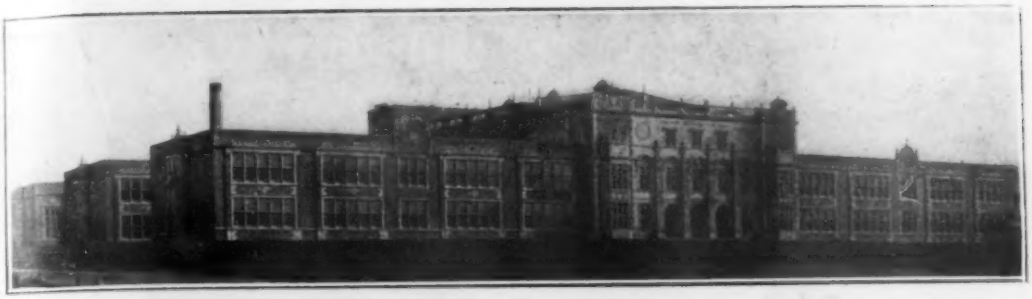
2. *What, in your opinion, should be undertaken by the Chamber of Commerce to improve the local conditions of direct importance to you?*

Notes of the discussion at all the conferences were taken and from these a ballot was prepared covering 103 proposals or suggestions. This ballot was mailed to the entire membership of the Chamber. Based on the votes as returned, a Major Program was formulated covering ten points. Zoning and a comprehensive city plan were two of the first three projects in this Major Program. This conference and questionnaire have been well termed "a thought survey" of the people of Des Moines on plans for the betterment of the city.

About the same time a conference was called by the Town Planning Commission of delegates from numerous civic organizations, including the Greater Des Moines Committee, the Playground Commission, the Federated Women's Clubs, the Garden Club, the Argonne Post, and the Chamber of Commerce. Resolutions were adopted urging a zoning ordinance. In June, 1923, favorable action was taken by the Council, and on August 4, 1923, a zoning ordinance was enacted naming a Commission of five members. Three of the members chosen are also members of the Town Planning Commission, and the Chairman of the latter is also Chairman of the Zoning Commission. This brings the Council and the two commissions into close association. The Zoning Commission began its sessions in the Municipal Building. It soon became evident, however, that zoning, though important, was but one element in something greater. It was decided to call into consultations from a sister city a man of wide experience well known to this conference, Harland Bartholomew, of St. Louis.

Sundry public meetings, together with conferences with the Town Planning Commission, the Zoning Commission, the Greater Des Moines Committee, the Chamber of Commerce, and the City Council, resulted in committing the city by contract not only to zoning but to the preparation of a Comprehensive City Plan under Mr. Bartholomew's direction. The work has been progressing now for over a year. It will require some months yet to finish the draft of the plan. The Major Streets Plan, in tentative form, is nearing completion. The work on zoning is progressing steadily, as is the study of parks and boulevards.

There is a feeling on the part of the Town Planning Commission and allied civic bodies



ROOSEVELT HIGH SCHOOL BUILDING, DES MOINES

that their feet are at last on solid ground. It will take years to carry out all the details of the Comprehensive Plan. But when it is adopted by the Council—and we do not question that it will be—the city's development will no longer be a matter of chance. Each year will see the city grow in symmetry, in the convenience and comfort of living, in the creation of beauty, and in the gradual flowering of a splendid plan in whose scope every section of the city will have had full consideration.

Minnesota Municipalities Discuss Partial Tax-Exemption of Buildings

AT the 1925 convention of the League of Minnesota Municipalities, held in Alexandria, this summer, a resolution was adopted requesting the Committee on Taxation and Assessments to prepare, for future consideration by the League, drafts of bills for submission to the Legislature on various subjects, including the so-called Pittsburgh Plan of assessing real estate. The committee's report to the League, on which this action was based, read in part as follows:

"In order to afford relief to those who live upon and improve their lands, proposals have been made from time to time to reduce or even eliminate taxes upon improvements. The cities of Pittsburgh and Scranton, Pa., undertook in 1913 a plan for a gradual reduction in the tax rate on buildings. This year, as a result of this gradual reduction, buildings in these cities will be assessed on a 50-per-cent basis and land 100 per cent of full value. The Pittsburgh Chamber of Commerce and the allied boards of trade of these cities have given this plan their unqualified endorsement. This is known as the Pittsburgh Plan.

"In New York state in 1921, a law was enacted, giving to municipalities the right to exempt new dwellings from taxation up to $5,000 per dwelling or apartment for a ten-year period, and the result has been a tremendous increase in the construction of homes and apartments and a consequent lowering of taxes on new dwellings.

"Our neighboring state of North Dakota, in 1917, provided for the assessment of land at 30 per cent of its value and improvements on farm lands at 5 per cent of their value. Cities were permitted to adopt a similar plan if they chose. In 1919 a new law was enacted providing that land, railroads and other utilities and business buildings should be assessed at 100 per cent of the actual value; buildings used for homes on city lots, livestock, personal property and farm machinery generally to be assessed at 50 per cent of value, while farm buildings and improvements were exempt entirely.

"Many of the cities of western Canada, after experimenting with the total exemption of improvements from taxation, have now turned to a partial exemption. While land continues to be assessed at 100-per-cent value in Victoria, improvements are taxed at 33⅓ per cent, in Calgary, Moosejaw and Vancouver improvements are taxed at 50 per cent; in Edmonton 60 per cent, Winnipeg 66⅔ per cent of full and true value. This is as compared with land, which is assessed at 100 per cent of full and true value.

"Wherever such a plan has been put into effect, it is claimed and it would appear that generally speaking the actual farmer, the small home owner or the business man has had his tax burden substantially lightened, while a heavier burden is cast upon the land speculator and the owners of valuable business and residence sites not being utilized to their full value.

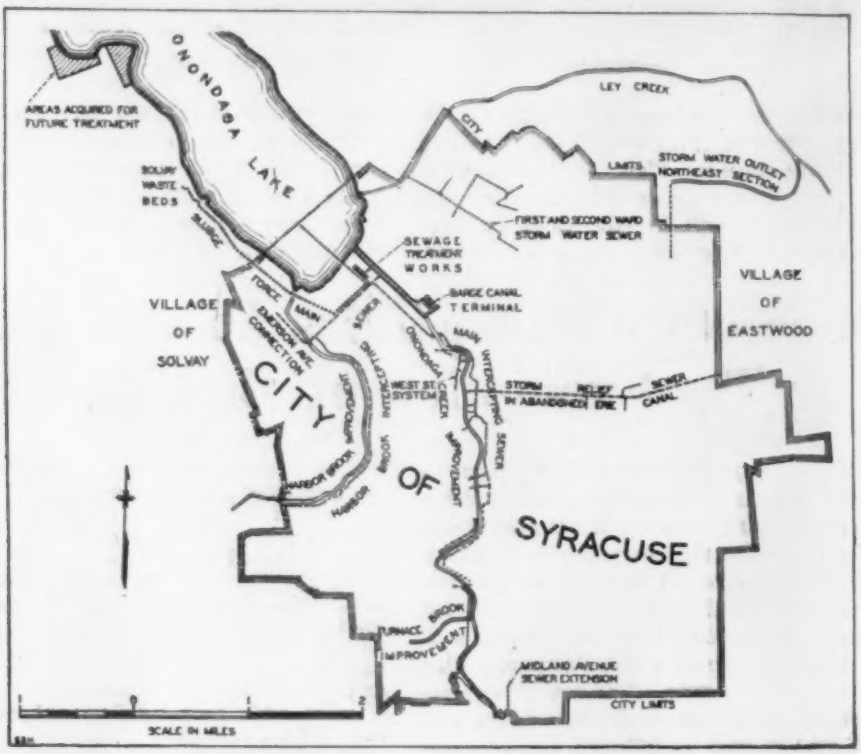
"The Pittsburgh Plan, so-called, could be put into operation in Minnesota by act of the Legislature."

One-half of civic progress is realizing it CAN be done.

—From *Chatter*, Chamber of Commerce, Chattanooga, Tenn.

The Sewage Treatment Works of Syracuse, N. Y.—Part I

System Involves Large Intercepting Sewer, Plain Sedimentation, Dilution, and Sludge Sterilization



OUTLINE MAP OF THE CITY OF SYRACUSE, SHOWING IMPROVEMENTS CONSTRUCTED BY THE SYRACUSE INTERCEPTING SEWER BOARD

THE main intercepting sewer of the city of Syracuse, N. Y., extends along Onondaga Creek, which drains most of the city, crosses under the creek, and is joined by the Harbor Brook intercepting sewer. From this junction the sewer extends directly to the sewage treatment works. This sewer brings to the works the domestic sewage flow of the entire city, with which is combined surface water entering the sewerage system during times of storm.

The treatment works are designed to handle 27.5 million gallons per day, the estimated 1940 average dry-weather flow. They have a maximum capacity of twice this quantity, or 55 million gallons daily, for treatment during storm flows.

Inasmuch as the main intercepting sewer during extended and severe storms is likely to carry sewage up to a maximum rate of 130 million gallons per day, an overflow chamber has been constructed whereby all flows in excess of 55 million gallons daily are directly admitted to a relief conduit instead of passing through and overloading the treatment works.

Before passing through the overflow chamber the sewage passes through a Venturi flume arranged, after calibration, to serve as a means of measuring the entire sewage volume prior to its entry into the overflow chamber of the treatment works.

The Treatment Works

The sewage treatment works are located on the filled-in area occupied by Onondaga Creek prior to the construction of the New York State Barge Canal Harbor and channel north of Hiawatha Street and in close proximity to

PANORAMIC VIEW OF TREATMENT WORKS, SHOWING SETTLING TANKS, PUMPING-STATION, GRIT CHAMBER, AND OVERFLOW CHAMBER—GAS COMPANY PLANT IN BACKGROUND

the city garbage reduction plant. Immediately east of the treatment works, the Syracuse Lighting Company is constructing a large gas works. The close concentration of these three more or less noisome utilities is advantageous as well as of civic interest and esthetic value.

The function of the sewage treatment works is treatment rather than complete purification of the sewage of the city. The capacity of

GRIT REMOVAL EQUIPMENT HOIST, CAB AND BUCKET

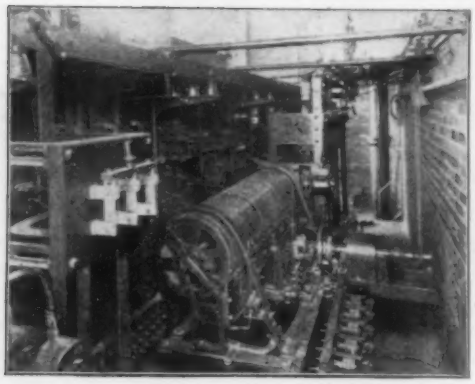
Onondaga Lake for dilution effects a great economy and is being utilized to the fullest extent. The treatment of the sewage is as follows:

Coarse bar screening removes large floating solids. The bars are spaced 2½ inches in the clear, and under actual operation retain floating objects which find entrance into the sewerage system, sometimes inexplicably. The coarse bar screens located at the entrance to the grit chamber are hand-raked every few hours.

Grit removal is effected by passing the sewage through a three-compartment grit chamber wherein its flow velocity is checked to a rate of about 1 foot per second, for a period of about 40 seconds. During this time the sand, cinders, macadam surfacing material, and other heavy inorganic street surfacing débris that have entered the sewers have an opportunity to settle to the bottom of the grit chamber. The velocity is sufficient to maintain in suspension organic matters of sewage origin. A clean grit, inoffensive and non-odorous, is obtained. It is removed without unwatering by a clam-shell bucket and electric traveling hoist, operating from an overhead track system controlled by an attendant in a cab integral with the hoist equipment. This grit is an excellent filling material that will serve admirably for surfacing walks and driveways and for filling the low spots around the treatment works.

Mechanically raked screens form the next stage in treatment. Each of the three grit chamber compartments is prolonged to form a screen compartment in which is located the bar screen having ½-inch clear spacing. The function of this screen is to strain out only such objects that, on account of size, might seriously interfere with the further stages of treatment and disposal. The sewage flowing between these bars leaves upon the screen surface substances and materials larger than the passageway between the bars. These consist largely of rags, cotton waste, vegetable débris, leaves, and a very small amount of uncomminuted fecal matter. To prevent the undue accumulation of material upon the screen, which because of the blinding of the screen surface would occur in a very short time under even ordinary flows, the rejecta are rapidly removed by mechanically propelled rakes. These are chain-operated and elevate the screenings into conveniently located hoppers.

INTERIOR VIEW OF MAIN PUMPING-STATION



REAR OF CONTROL BOARD AT MAIN PUMPING-STATION, SHOWING MASTER CONTROLLER DRIVE

The hopper bottoms are open and their contents discharge into steel cans, which, when filled, are emptied into a wheelbarrow and thence taken to low areas near the works, where the screenings are buried under a layer of grit removed from the grit chamber. Thus the screenings are disposed of effectively in an inoffensive, inexpensive, and yet helpful manner.

Since the screens are not intended to serve as other than protective devices, any straining action due to blinding would remove much material which could otherwise pass freely through the bar spaces. The mechanical rakes were therefore designed to pass over the entire screen surface twice every minute, assuring a practically clean screen at all times. The prior and unintentional removal of substances best handled in the settling tanks is thus prevented and the volume of screenings produced kept down to a practical minimum.

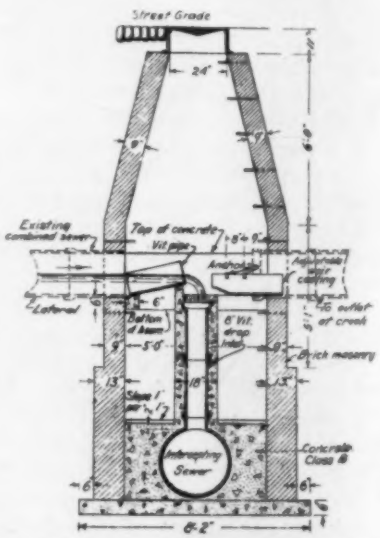
After passing through the bar screens, the sewage enters the suction well of the main sewage pumping-station. Each of the three screen compartments discharges into a common well located directly under the main sewage pumps.

The main sewage pumps are housed in the sewage pumping-station, as are also the screens, the control apparatus, auxiliary equipment, and the various service rooms, including shop, lavatories, and laboratory. The four main pumps are the Morris 24-inch horizontal shaft centrifugal type, direct-coupled to Westinghouse 75-horse-power slip-ring motors. Variable speed control, producing pump delivery in accordance with the volume of the inflowing sewage, is obtained through a float-actuated master control equipment which functions automatically. By means of this control, the velocity in the grit chamber is maintained at the optimum point without the very expensive loss of head common to most grit-chamber installations. This effects a continuous saving in electric power charges of about $10 per day.

The pump discharge pipes are joined into a common cast iron force main, increasing from 24 inches to 48 inches in diameter, which, after leaving the building, is joined to a 48x24 Venturi sewage meter for measuring the quantities pumped. The meter is placed in a concrete vault contiguous with and accessible to the pumping-station, with piezometer connections to the indicating-recording device located on the control floor of the station.

Within the pumping-station are placed as auxiliaries two motor-operated vacuum priming pumps, either unit being capable of priming a 24-inch pump in about 35 seconds. Adjacent thereto is located the 10-kilowatt motor-generator set which produces the direct current required for the operation of the grit cleaning mechanism. A 6-inch sump pump of the vertical submerged type, for handling drainage and seepage, is also located inside the station in a deep sump well.

The control board located on the mezzanine floor of the main pumping-station is especially worthy of comment. The panels contain equipment for controlling the motors for all of the machinery employed in the treatment works; also the hydraulically operated discharge valves on the main pumps; also numerous indicating and recording gages and supervisory operation charts. Within the compass of one board, almost 40 feet long and containing thereon over



LEAPING WEIRS AND INTERCEPTING CHAMBER

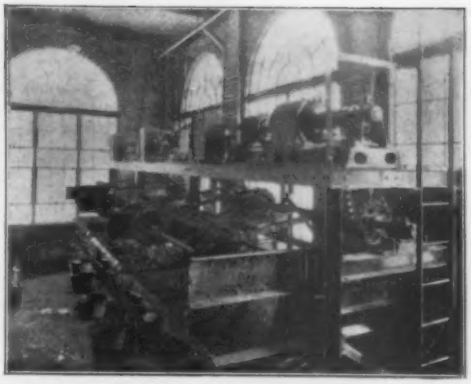
200 pieces of equipment and apparatus, are located the controls for the entire works. One operator serves the board. Additional attendants are, of course, required for the complete functioning of the plant.

The influent conduit receives the discharge of the Venturi meter and conducts the flow to the settling tanks. The conduit is largely built integral with these tanks of reinforced concrete, and has twenty-four 16-inch square sluice-gate-controlled ports, which feed the tanks. The cross-section of the conduit is gradually reduced from 4 feet, 6 inches by 4 feet, closely in proportion with the diminishing sewage flow, until the conduit is 18 inches square at the blow-off end.

The settling tanks, of which there are four, are of the square type, about 71 feet by 71 feet in plan at the water-level and a depth to the center of the sloping bottom, exclusive of the small sludge cone at that point, of 10½ feet. The effective capacity of the tanks is sufficient to provide one-hour detention for the average flow. The sewage enters each tank through six ports placed uniformly across the inlet end, and flows, after baffling, more or less directly across to the outlet weir, extending the full length of the tank. An effluent channel conducts the flow from the weir to the tank effluent chamber. Each of the four effluent chambers is connected by a 30-inch cast iron pipe to the deep-water conduit extending along the effluent end of the tanks.

The deep-water conduit starts at the overflow chamber and continues as a part of the twin conduit on land (the other half of the twin conduit being the shore relief terminating at the shore) until the water's edge is reached. Beyond that point the deep-water line continues as a 60-inch reinforced concrete subaqueous pipe for a distance of about one-third of a mile and to a depth of about 25 feet below normal lake level.

Several 24-inch openings in the sides and at the end of this conduit serve to disperse the effluent over a large area at the outlet end of the pipe, which is carried on piles and is surrounded by a mass of protective riprap. After the effluent leaves the deep-water line, it is intermixed with the waters of Onondaga Lake, whose digestive capacity and oxygen self-replenishment ability is adequate for the burden likely to be placed upon it during the next 20 years.



SCREEN RAKING MECHANISM, SHOWING DRIVE AND HOPPERS

Sludge Disposal

Having disposed of the effluent, let us return to the settling tanks and follow the path of the solids which settle on the bottom of the tanks during the one-hour average detention of the sewage therein. The principle established in Syracuse several years ago in the demonstration plant, that high sedimentation efficiencies are obtainable with short settling periods, provided continuous sludge removal is practiced, dictated the design of these settling tanks.

The sludge removal mechanism used in the settling tanks is the Dorr clarifier type, so successfully applied in industrial work and more recently to municipal utilities. The plow blades of this mechanism are mounted upon four trussed arms suspended from a heavy central vertical shaft rotating at a speed of about four revolutions per hour. They slowly sweep the deposited sludge in a spiral path to the central cone of the tank, from which point the sludge flows through a submerged 4-inch suction pipe into the sludge pumping-station piping.

(To be continued in the November issue)

The Main Object of City Planning

"Good planning for cities is not primarily a matter of esthetics, but of economics. The main object is to prevent or remedy the physical and moral evils and losses which accompany congestion of population.—It is a great public need not only for beauty's sake, but for the sake of the health, efficiency and happiness of the people."

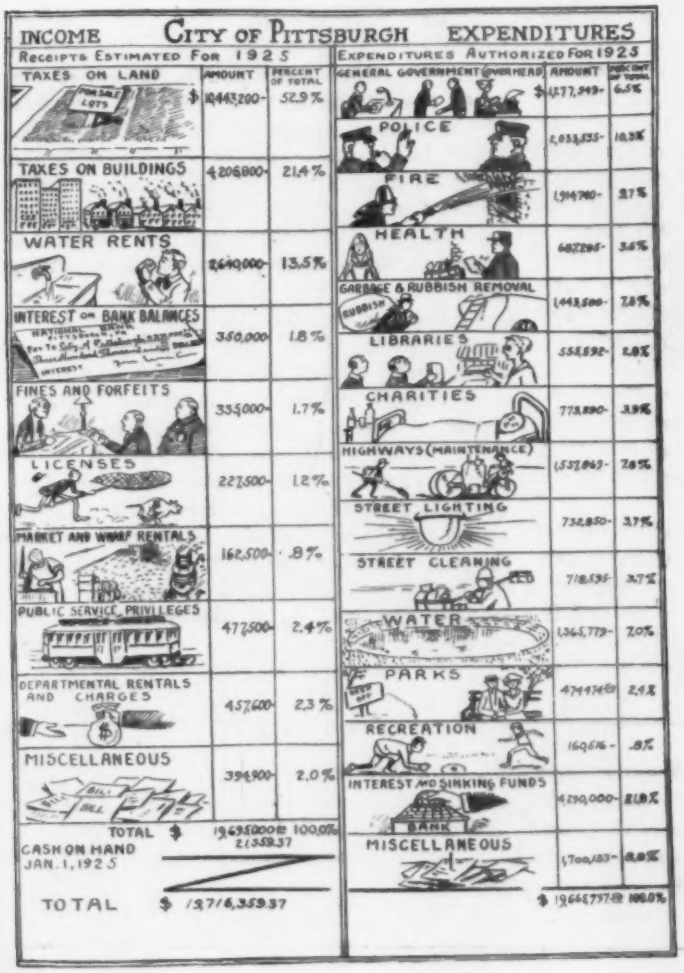
—CHARLES W. ELIOT.

Features of Budget and Accounting Procedure in Pittsburgh

By J. C. Slippy
Chief Accountant, City of Pittsburgh, Pa.

THE annual city budget for providing funds for municipal activities in Pittsburgh is made up by the heads of the departments filing, in the fall of each year, with the Mayor, an itemized estimate of the money each believes necessary for the proper administration of his department for the coming year. The Mayor goes over these requests very carefully with each department head and then submits the departmental estimates for the budget to the Council. Public hearings are held on the departmental estimates by the Finance Committee of Council, consisting of the whole Council, after which each item is carefully considered.

An estimate of miscellaneous revenues, outside of taxes on real estate, consisting of water rents (both metered and flat rates), amusement licenses, business licenses, police court fines, charges for service rendered by departments in the way of fees for permits and inspections, privileges granted public service corporations, municipally owned property rentals, interest on bank balances, etc., is submitted to the Council by the Controller.



Fixing the Amount of the Budget

When the departmental estimates for the budget are received from the Mayor, the Council deducts from their total the amount of miscellaneous receipts as reported by the Controller. Then by dividing the assessed valuation of all real estate as reported to the Council by the Department of Assessors into this remainder, the tax rate that will meet the estimates as presented to the Council is found. If this tax rate seems too high, the Council must make cuts in the estimates to bring the rate down to the proper basis. The appropriations for the city for 1925 total $19,665,737.50. An analysis of this proposed expenditure by main functions and of the main sources of city receipts estimated for 1925 is shown in the accompanying chart. It will be noted that 74.3 per cent of the total revenue is raised from the general property tax (this including both current and prior years' taxes on land and buildings), 13.5 per cent from

water revenues, and the balance of 12.2 per cent from miscellaneous sources.

Upon the Council's passing favorably upon the estimates, the amount of the budget is fixed, and the various appropriations granted each department for salaries, wages, miscellaneous services, supplies, materials, repairs, equipment, and improvements are incorporated in an appropriation ordinance. As this is prepared some months in advance of actual expenditures, and as some items will prove to be too small and others too large, some elasticity is provided for by transfers made by the Council during the year from one appropriation account to another.

After the appropriation ordinance becomes a law, no provision can be made for additional funds except in case of a public emergency, which must be certified to the Council by the Mayor and Controller.

Free Cash in Annual Surplus

The setting up of an appropriation in the budget or appropriation ordinance does not necessarily mean that the money will be spent in its entirety. Strict budgetary control and a general understanding that money must not be spent needlessly, stimulates a conservation of funds and creates a surplus. This surplus is taken into consideration when the tax rate is fixed, that is, at the end of the year unexpended balances in all appropriation accounts revert to the general fund of the city, and an estimate of them is made and deducted from the amount which would ordinarily have to be raised for the next year's budget. While the exact amount cannot be definitely ascertained before closing the books at the end of the fiscal year, the practice exists of estimating the amount and using it to reduce the tax levy for the current year. The amount of free cash has varied considerably from year to year, as follows: 1920 carried to 1921, $709,461.34; 1921 to 1922, $81,686.62; 1922 to 1923, $152,661.57; 1923 to 1924, $436,406.38; 1924 to 1925, $21,359.37. This "free cash" is in effect a tax rebate.

The amount of the tax rate having been determined, it is fixed by ordinance, and the Department of Assessors is directed to levy a tax upon all property appearing upon the tax rolls. The total amount of the levy for 1925 for city purposes was $14,978,977.65, but experience has shown that a certain percentage of taxes are not paid in the same year in which they are assessed. The percentage of taxes collected during the year of their assessment has risen from 85 per cent in 1916 to 88.7 per cent in 1924, so that in figuring the amount of money that would actually be available from the tax levy for 1925, the percentage of 88.7 per cent was used, giving an estimate of $13,286,352 that can be counted upon from the general property tax. This figure is $36,352 larger than that used when the budget was closed, since at that time the Department of Assessors had not closed their books and a total valuation of $986,000,000 was used.

Operation of the Graded Tax Law

The valuation of all real estate in the city of Pittsburgh for the year 1925, as reported to the Council by the Department of Assessors was: land, $547,475,280; buildings, $441,354,840; a total of $988,830,120.

Under the provisions of an act of the Legislature of 1913 (P.L.209) the city was required to assess a rate upon buildings for the years 1914 and 1915 equal to 90 per cent of the rate levied on land; at 80 per cent in 1916, 1917 and 1918, and 10 per cent less each triennial assessment thereafter until the year 1925, when the tax levied on buildings equals one-half that levied on land. Therefore, in computing the amount of money from the general property tax which was necessary to provide for the 1925 budget of the city of Pittsburgh, the land valuation of $547,475,280 was multiplied by 19.5 mills (the high tax rate) and the building valuation of $441,354,840 by 50 per cent of the high millage, or 9.75 mills. To determine the average millage for the city of Pittsburgh, as compared with that of cities having a single millage on land and buildings, the valuation of land is multiplied by the millage on land and the valuation of buildings by the millage on buildings; then by dividing the amount of this levy by the total valuation of land and buildings the average millage is computed, which for 1925 is 15.148 mills.

The figures at top of page 363 show changes for the last ten years in assessed value of property, tax basis and millage or tax rate.

This "Graded Tax Law" does not apply to the tax levy made by the Board of Public Education, which for 1925 was 11.5 mills against the total valuation of $988,830,120.00; giving a total levy for their use amounting to $11,371,546.38. The percentage of school taxes that are paid during the year of their assessment is practically the same as that of the city.

An arrangement has been made between the Board of Public Education and the city of Pittsburgh under which the city Department of Assessors makes the assessment of property for the Board of Public Education, and the City Treasurer collects the school taxes, on a basis of the actual cost of the work.

Form D-11 (1924)

DEPARTMENT OF CITY TREASURER

TO THE CITY CONTROLLER. PITTSBURGH, 192

I hereby certify the following receipts of money for the ____ day of ____ 192 ____

Accounting to ____ and deposits were made in bank as stated below. ____ City Treasurer.

			Amounts Brought Forward			Amounts Brought Forward		
1. Taxes Current Year			20-1. Bureau of Police			21. Public Service Privileges—P. R. Co.		
2. Taxes current year, delinquent			a. Sale of Horses			a. Bridge Tolls		
3. Taxes prior years, delinquent			b. Sale of Materials			b. Cleaning Tracks		
4. Flat water rents, current year			c. Charges			c. Asphalt and Repairs		
5. Flat water rents, current year, Del.			20-4 Bureau of Fire			d. Tax on Cars		
6. Flat water rents, prior years, Del.			a. Sale of Horses			e. Tax on Gross Receipts		
7. Metered water rents, current year			b. Sale of Materials			22. Public Service Privileges—Other:		
8. Metered water rents, current year Del.			c. Charges			a. Allegheny Illuminating Co.		
9. Metered water rents, prior years, Del.			20-5. Bureau of Electricity			b. Penn'a. Light & Power Co.		
10. Water, miscellaneous sales:			a. Charges			c. Consolidated Gas Co.		
a. Water used in Bldg. construction			20-6. Bureau of Boiler Inspection			d. Duquesne Light Company		
b. Other sales			a. Engineer's Permits			e. Dock Master		
11. Delinquent tax penalties & Adv'g.:			20-7. Bureau of City Property.			23. Minor Privileges:		
12. Interest on bank balances			a. Rents			a. B. & O. R. R. Right of Way		
a. Daily balances			b. Charges			b. Bridge Rentals		
b. Delinquent tax balances			c. Sale of Material			c. Switch Licenses		
13. Fines and forfeits:			d. Comfort Stations			d. Weigh Scales Licenses		
a. Central Station			20-8. Bureau of Deed Registry			e.		
b. 43rd Street Station			a. Charges			24. Assessment Improvement Refunds:		
c. Oakland Station			20-9. Bureau of Highways and Sewers			a. Street and Sewer Liens		
d. Frankstown Ave. Station			a. Excavations in streets			b. Vacation of Public Streets		
e. South 18th St. Station			b. Laying sidewalks +			c. Redemption of Property		
f. Allegheny Station			c. Charges			d. Sale of Property		
g. Woods Run Station			d. Sale of horses			25. Miscellaneous—N. O. C.		
h. Center Av. Station			e. Sale of Material					
i. Morals Court			20-10. Bureau of Engineering					
k. Aldermen's Fines. V. C. O.			a. Party walls					
14. Liquor Licenses			20-11. Bureau of Parks					
15. Business Licenses:			a. Rents					
a. Amusements			b. Charges					
b. Bill Posting			c. Sale of Materials					
c. Dance			d. Sale of Animals and hides					
d. Junk Dealers			e. Lake Privileges					
e. Lodging Houses			f. Refreshment permits					
f. Milk Dealers			g. Golf permits					
g. Plumbers			h. Lockers					
h. Pool Tables			20-12. Bureau of Water					
i. Picture Machine Operators			a. Ferrules					
k. Pawnbrokers			b. Tee connections					
l. Slot Machines			c. Sale of scrap					
m. Second-hand dealers			d. Charges					
n. Stock sellers			20-13. City Weigh Scales					
o. Vendors			a. Charges					
p. Explosives			20-14. City Clerk					
16. General Licenses:			a. Printing Private Ordinances					
a. Vehicles			20-15 Department of Law					
b. Bicycles			a. Docket Fees					
c. Dogs			b. Costs and witness Fees					
17. General Government Licenses:			c. Sheriff's Fees and advertising					
1. Bureau of Building Inspection			20-16. City Treasurer					
a. Building Inspection permits			a. Levy and collection of school tax					
b. Sign permits			20-17 North Side Library					
c. Electric wiring permits			a. Library Fines					
2. Bureau of Electricity			b. Rents					
a. Inspection			20-18. Miscellaneous					
3. Bureau of Boiler Inspection			a. Refunds to appropriations					
a. Inspections of boilers and power plants								
18. Rentals—Markets:								
a. Diamond Market								
b. South Side Market								
19. Rentals—Wharves & Landings:								
20. Rentals and Charges—Departmental:								
20-1. Department of Charities								
a. Grants from State of Penn'a.								
b. Charges—Care of patients								
c. Sale of Materials								
20-2. Department of Health								
a. Board of Edu. for Med. Insp.								
b. Care of patients at hospitals								
c. Disinterment permits								
d. Vaccine Anti-toxin								
e. Sale of Milk								
f. Furnace permits								
g. Permits for test wells								
Forward			Forward					

TOTAL GENERAL FUND RECEIPTS:		
Benefit Assessments for Street and Sewer Improvements:		
Street Assessments		
Sewer Assessments		
SPECIAL MUNICIPAL ACCOUNTS		
Stores for Distribution		
Guarantee of Deposit Funds		
TRUST FUNDS		
Special Police Fund		
One-half 2% tax on gross receipts ins. Cos. in Penna. for use of Disability Board		
North Side Market		
H. W. Oliver Baths, South Side		
BOND SALES		
Principal		
Premium		
Accrued Interest		
SINKING FUNDS		
Interest on Sinking Fund Bank Balances		
Interest on Investments (detail)		
Appropriations for Sinking Funds		
Redemption of Investments		
Purchase of Investments (Inter m)		
TOTAL RECEIPTS		

FORM "A."—FOR DAILY REPORT OF RECEIPTS

Year	Assessed Valuation	Tax Basis	Land	Millage Buildings	Average
1916	$782,563,920.00	$614,307,197.00	12.6	10.68	11.63
1917	792,942,840.00	621,166,468.00	11.5	9.2	11.22
1918	802,571,410.00	627,711,099.00	14.5	11.6	13.44
1919	806,020,730.00	613,330,126.00	15.7	10.99	13.83
1920	814,567,550.00	624,846,710.00	19.0	13.3	16.65
1921	829,848,120.00	636,578,266.00	20.0	14.0	17.47
1922	868,177,930.00	625,830,868.00	20.0	12.0	16.55
1923	928,864,800.00	674,094,967.00	20.0	12.0	16.6
1924	951,157,910.00	692,140,881.00	20.0	12.0	16.46
1925	988,830,120.00	681,351,444.00	19.5	9.75	15.15

Monthly Check of Receipts with Expenditures

When Mayor W. A. Magee took office, pledged to a platform of efficiency and economy in city expenditures, one of the first things undertaken was a monthly check of current receipts with expenditures. All receipts go into one general fund, and appropriations are made to the various departments from this general fund.

All receipts, with the exception of fines and forfeits taken by police magistrates, which are reported monthly, clear daily through the City Treasurer's office, and are reported by him to the Controller on Form "A."

At the end of the month, the totals for each of the 25 groups are reported to the Mayor on Form "B," which shows:

1. Collections this month and same month last year, and increases and decreases.

2. Collections for January 1 to date and same period last year, and increase and decrease.

3. Balance to collect to meet the total of the budget for the year.

The details of the items within each of the 25 groups are shown on Form "A."

The Controller prepares a quarterly statement of receipts for the Council similar to that of Form "B," but without comparisons with the prior periods. Form 'B" was installed because the Mayor desired this information monthly.

The reports on Form "B" sent to the Mayor at the end of each quarter of course check with the Controller's quarterly statements. The Controller's office also submits quarterly a statement of appropriation balances for each code account appropriation, warrants drawn, vouchers registered, appropriation balances, reserve for open market orders, for contracts authorized, for contracts registered, total reserve, and unencumbered balance.

There has seldom been an inadequacy of receipts to meet appropriations, since practically one-half of the estimated receipts are collected during the first quarter. Also, the "free cash" or the balance in appropriations above reserves for contracts, open market orders, and other obligations is carried to the next year.

CITY OF PITTSBURGH — DEPARTMENT OF CITY TREASURER

SUMMARY OF GENERAL FUND RECEIPTS - 1925

MONTH ENDED ____

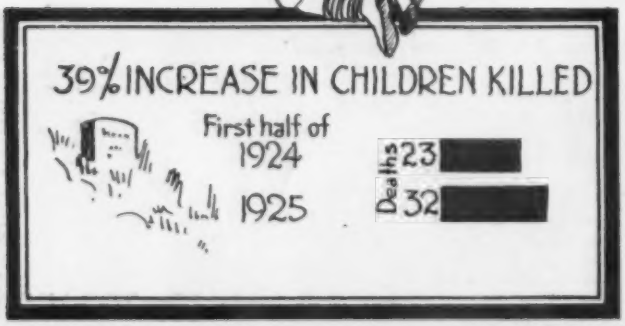
CLASSIFICATION	THIS MONTH	CORRESPONDING PERIOD LAST YEAR	COMPARISON BETWEEN THIS MONTH AND CORRESPONDING PERIOD LAST YEAR — INCREASE	COMPARISON BETWEEN THIS MONTH AND CORRESPONDING PERIOD LAST YEAR — DECREASE	JANUARY 1ST TO DATE	CORRESPONDING PERIOD LAST YEAR	COMPARISON BETWEEN JANUARY 1ST TO DATE AND CORRESPONDING PERIOD LAST YEAR — INCREASE	COMPARISON BETWEEN JANUARY 1ST TO DATE AND CORRESPONDING PERIOD LAST YEAR — DECREASE	ESTIMATED TOTAL FOR THIS YEAR	BALANCE TO COLLECT TO MEET ESTIMATES
(1) TAXES, CURRENT YEAR	852 687 69	1 108 628 51		273 867 72	11 394 962 17	11 788 112 37		397 860 20	13 280 000 00	1 885 037 83
(2) TAXES, CURRENT YEAR, DELINQUENT	76 862 73	82 713 26		7 850 53	121 111 06	137 239 99		16 128 94	800 000 00	678 888 06
(3) TAXES, PRIOR YEARS DELINQUENT	87 196 58	86 358 10	1 838 48		674 610 36	678 792 66	84 812 67		800 000 00	125 389 64
(4) FLAT WATER RENTS, CURRENT YEAR	61 409 08	86 064 12		13 866 08	729 860 77	711 107 44	18 763 33		800 000 00	70 149 23
(5) FLAT WATER RENTS, CURRENT YEAR, DEL.	8 800 08	9 383 36		683 34	16 280 80	16 226 33	1 055 86		75 000 00	58 760 20
(6) FLAT WATER RENTS, PRIOR YEARS, DEL.	8 886 66	7 459 60		1 902 94	72 181 06	66 708 61	6 472 46		86 000 00	12 818 94
(7) METERED WATER RENTS, CURRENT YEAR	113 358 56	132 676 63		19 318 08	779 055 56	818 940 61		44 786 23	1 800 000 00	736 944 62
(8) METERED WATER RENTS, CURRENT YEAR, DEL.	8 707 70	7 662 27		1 044 57	7 625 56	8 621 84		1 896 88	80 000 00	65 376 64
(9) METERED WATER RENTS, PRIOR YEARS DEL.	2 914 40	8 656 19		7 840 79	86 780 62	86 739 78		9 956 17	100 000 00	41 218 16
(10) WATER, MISCELLANEOUS SALES	1 388 08	1 227 68	160 41		8 616 41	8 662 16		26 76	20 000 00	11 386 59
(11) DELINQUENT TAX PENALTIES AND ADVERTISING	13 733 08	16 667 00		1 933 98	101 861 39	86 867 17		8 028 78	160 000 00	58 138 61
(12) INTEREST ON BANK BALANCES	1 308 89			1 308 89	139 803 51	166 179 97		18 377 46	380 000 00	210 196 49
(13) FINES AND FORFEITS	29 880 28	38 350 00		8 479 78	139 611 08	166 852 80		28 321 68	330 000 00	188 888 88
(14) LIQUOR LICENSES										
(15) BUSINESS LICENSES	8 914 00	6 701 80		787 80	66 755 28	66 469 80	285 78		100 000 00	33 244 72
(16) GENERAL LICENSES	806 60	1 766 20		1 159 80	34 262 80	33 987 96	284 99		40 000 00	8 731 10
(17) GENERAL GOVERNMENT LICENSES	9 502 48	6 133 80	1 368 68		82 920 82	48 918 60	7 004 92		87 800 00	14 879 68
(18) RENTALS, MARKETS	6 281 84	6 388 48		106 86	38 840 03	36 788 33	82 70		122 800 00	86 684 97
(19) RENTALS, WHARVES AND LANDINGS	1 881 81	1 116 67	466 86		18 291 66	18 262 82	828 84		40 000 00	22 706 34
(20) RENTALS AND CHARGES, DEPARTMENTAL	21 827 86	86 827 84		86 469 98	198 717 82	230 661 78		31 886 87	437 800 00	236 786 08
(21) PUBLIC SERVICE PRIVILEGES, PGH. RYS. CO.					68 182 28	81 186 81	33 886 77		462 800 00	386 467 72
(22) PUBLIC SERVICE PRIVILEGES, OTHER	38 86	80 82		21 96	20 746 22	28 480 99		8 706 77	28 000 00	4 284 78
(23) MINOR PRIVILEGES	618 67	4 608 39		4 888 72	20 980 03	18 306 80	2 884 83		28 000 00	6 084 97
(24) ASSESSMENT IMPROVEMENT REFUNDS	1 461 00	738 80	722 80		86 829 00	22 436 86	6 088 88		80 000 00	28 477 00
(25) MISCELLANEOUS N.O.C.	80 00	--- ---	80 00		8 720 88	338 980 78		328 266 88	188 800 00	184 178 12
TOTALS	1 214 882 88	1 600 488 88	1 826 81	386 717 48	14 778 474 80	15 148 742 81	370 267 81	718 536 13	18 888 800 00	4 888 828 20
COLLECTIONS IN EXCESS OF ESTIMATES										

FORM "B."—MONTHLY REPORT OF TOTALS FOR THE TWENTY-FIVE GROUPS

No City Can Evade This Responsibility

Which Do You Choose?—More Neighborhood Playgrounds, or More Children Killed on the Streets?

AN increase of 10 per cent in the number of children slightly and seriously injured, and an increase of 35 per cent in the number killed as a result of traffic accidents to children under 16 years of age in Cleveland, Ohio, during the first half of this year, over the corresponding period of 1924, are disclosed in a letter from the Cleveland Automobile Club to the City Council of Cleveland, published in *The City Record* for August 5, 1925. This letter is such a stirring plea for an adequate playground system as the alternative to continued needless sacrifice of children's lives, that THE AMERICAN CITY is glad to quote the following paragraphs as an appeal to city officials generally to face frankly this unavoidable responsibility:

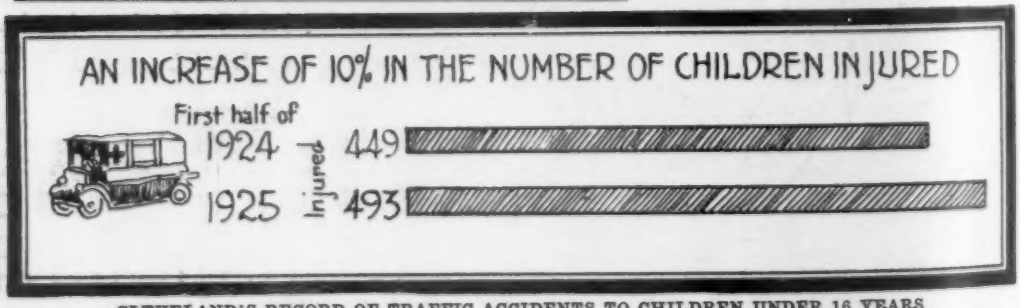


"These figures indicate the absolute necessity of doing something to reduce the traffic hazards to children, who naturally cannot be expected to exercise mature judgment in their conduct on the streets, especially since so many thousands of them have nowhere else to spend their leisure time.

"We need not wonder at a still further increase in the percentage of traffic accidents involving smaller children, if the city of Cleveland fails to provide proper playgrounds for several hundred thousand children, who, during the vacation season, have no place for recreation except the back alleys and the streets.

"We have had safety campaigns, lectures and talks to mothers, editorials and propaganda galore, but all to no effect. It is all very well to impress upon the Congress of Mothers that danger, death and destruction are ever present in the street during these days of congested traffic, but this does not solve the problem. The question of providing safe, healthful playgrounds for a quarter of a million of the future generation is not merely one of preventing the children from being injured by automobiles, but it involves providing the means of producing healthier, stronger, more virile manhood and womanhood.

"We have been expending millions and will continue to spend more millions in erecting beautiful buildings which are a marvel of architecture for the purpose of training the little minds of our sons and daughters, but until now, Cleveland has not only



CLEVELAND'S RECORD OF TRAFFIC ACCIDENTS TO CHILDREN UNDER 16 YEARS
Graphs prepared by THE AMERICAN CITY from the letter of the Cleveland Automobile Club to the City Council

neglected but practically refused to provide the space and the equipment for healthful outdoor exercise and producing stronger and healthier little human bodies with an increased resistancy in the battle of life. Possibly, it is not going too far to say that scores of little lives that have been sacrificed on account of the inroads of illness, might have been saved if these children had been physically stronger to fight the various diseases which are peculiar to childhood.

"Clean, healthful, well-equipped and hygienic playgrounds, mean better manhood and better womanhood in the coming generation. We are saving a few paltry dollars by continuing a niggardly policy in this direction and are paying for it in scores of little lives.

"It is time for the fathers and mothers and the officials of the city of Cleveland to wake up and take the lead in a national way in providing the means for building the best playgrounds in any city in the United States. The total cost of this distributed among the thousands of taxpayers in the city of Cleveland will amount to little more than the price of a few good cigars each year.

"Traffic Commissioner Donahue repeatedly has pointed out the necessity of providing safe places for children to play if they are not to be the victims, in increasing numbers, of the rapidly-growing traffic hazards of to-day. Repeated warnings to parents are bound to fail of their purpose so long as the city does not make room for its children to play safely.

"At a small annual cost, distributed equally over the taxable property of the city, it is possible to bring about a very great improvement."

Ohio's New Act for Additional Playground Levies

In the letter to the City Council from which the foregoing paragraphs are quoted, The Cleveland Automobile Club states that the city of Cleveland and the Board of Education ar now maintaining 75 playgrounds, which, if large enough, adequately equipped and properly located, would be used by an average of 2,000 children per playground per day—a number entirely too large for present facilities. The Club also comments favorably on attention recently given by the City Manager and members of the Council to the question of increasing the appropriations for city playgrounds, and calls attention to an act of the 1925 Ohio Legislature which authorizes municipalities, counties and school districts to vote additional levies for recreation purposes. Pertinent sections of the act are as follows:

AN ACT

An act relative to tax levies for recreational activities. (S. B. No. 107, Mr. Collister).

Be it enacted by the General Assembly of the state of Ohio:

Section 1. The board of education of any school district, the council or other legislative authority of any city or village, or the county commissioners of any county may, and upon the filing, in the manner provided by statute for the filing of initiative petitions in municipalities, of a petition therefor signed by the qualified electors of such school district, city, village, or county equal in number to ten per centum of the votes cast for governor in the last state election, shall, by resolution, submit to the electors of such school district, city, village, or county the question of authorizing such board of education, council or other legislative body of the city or village, or such county commissioners to levy annually a tax not to exceed one-tenth of one mill on the dollar of assessed valuation, in municipalities or counties having a population of more than fifty thousand and not to exceed two-tenths of one mill on the dollar of assessed valuation, in municipalities or counties having a population of fifty thousand or less, for the purpose of establishing, equipping, embellishing, operating, and maintaining playgrounds, playfields, gymnasiums and indoor recreation centers, which levy if authorized shall be in addition to all other levies authorized by law, and subject to no limitation on tax rate except as in this act provided.

Section 2. The submission of such question to the electors in the manner provided by law for the submission of tax levies to a vote of the people in the political subdivision in which such election is to be held, except that the form of ballot shall be as follows:

	For an additional levy of taxes for recreational purposes not exceeding ..... of one mill. Yes.
	For an additional levy of taxes for recreational purposes not exceeding ..... of one mill. No.

The levy so authorized shall not continue in effect for a period exceeding five years.

A Contrast in Villages

DURING a recent rather extended automobile trip the writer saw two kinds of villages. One kind looked entirely commercialized, unkempt, a hodge-podge. They looked like places without pride or civic spirit.

The other kind were the opposite. They appeared to point with pride to one section and say to the visitor, "This is our business section," and to the other, surrounding section, and say, "Here are our homes, our lawns, our flowers and gardens. This section is sacred from the sordidness of commercialization."

The difference was just this: The beautiful villages were zoned, the unbeautiful were not zoned. In the latter, here and there, scattered up and down the lines of homes, were gas stations, sidewalk pumps, lunch-stands, the "Dew Drop Inn," the "hot dog" counters. Tom, Dick and Harry, little or big, had been allowed to do as they pleased without let or hindrance. In the zoned villages all was neat and equally as prosperous. —Canton, N. Y., *Plain Dealer*.

Awards Offered for Improvement of Playgrounds

This Contest Is Open to Your City

AN award of $500 and considerable publicity may be won by your city if it enters the contest for better playgrounds announced by the Playground and Recreation Association of America.

As a stimulus to the beautification of playgrounds, the Harmon Foundation has offered prizes totaling $3,000 to communities whose playgrounds show the *greatest progress* in attractiveness in a year's time. The sum of $500 will be awarded to the community having the leading playground in each of three population groups as follows: communities under 8,000; communities 8,000 — 25,000, and communities of more than 25,000. Additional awards of $50 each will be made to the ten other playgrounds that rank highest in each of these population groups. A community may enter as many playgrounds as it wishes, but not more than one award will be made in a community.

Aids Available to Contestants

Several layouts of playgrounds showing how equipment, trees, shrubbery, and flowers can be arranged to secure the maximum use and finest landscape values are available. Nursery companies have been invited to prepare lists of stock available to follow the layout suggestions and to arrange for special prices to the entrants. This material, with the names of the judges and full information regarding the competition and entry blanks, is in printed form for distribution to contestants and may be had on request from the Playground and Recreation Association of America.

Will your city win one of the awards?

Landscape architects and nursery companies are cooperating in what promises to be a national movement for the beautification of playgrounds. Other agencies are expected to join the campaign.

The awards are to be administered by the Playground and Recreation Association of America, and all entries and correspondence concerning the contest should be addressed to the Association at 315 Fourth Avenue, New York City. Entries must be filed by December 1, 1925, or be in the mail on that date. The awards will be made November 15, 1926.

Applications

Applications for the award should be signed by the executive of the group maintaining the playground entered and the president or chairman of this group. The contest is to be open only to playgrounds administered by non-commercial groups and organizations.

Photographs

Awards will be made primarily on the basis of photographs and statements submitted showing the progress made in the beautification of the playground. The Playground and Recreation Association reserves the right, however, of having its representatives make visits, should it so decide. At least two of the photographs should show the playground in active use, as it is a condition of the award that all eligible playgrounds should be well used.

The first photograph must be sent to the Playground and Recreation Association of America not later than January 1, 1926, and must have been taken since October 1, 1925. During the spring, summer, and fall of 1926, progress photographs are to be submitted, two copies of each being furnished. They should be in black and white and unmounted. In size they must not exceed 8½ x 11 inches, and, although no minimum size is to be required, it is suggested that no photograph smaller than 3 x 5 inches be sent in. The photographs become the property of the Playground and Recreation Association of America, which will have full rights for their use.

Judges

The judging committee will be composed of from five to seven persons qualified to judge the playgrounds. The judges have the right to make no awards if, in their opinion, none of the playgrounds entered shows sufficient improvement to secure an award under the conditions.

The Need for Uniform Motor Traffic Laws

Courtesy of Syracuse ***Telegram and American***

STANDARDIZED LEGISLATION FOR STREET AND ROAD TRAFFIC WOULD TEND TO PREVENT CONFUSION AND INCREASE SAFETY

Successful Operation of Public Utilities in Jamestown

With Special Reference to the Municipal Lighting Plant

By Samuel A. Carlson
Mayor, Jamestown, N. Y.

IN advocating municipal ownership, I do not favor socialistic government ownership of stores and factories, because these enterprises can be regulated by competitive methods, but whenever any commodity or service which is necessary for the well-being of community life becomes monopolized for purposes of greed, then public control is justified.

When, as a councilman, I first introduced a resolution to municipalize and sell electric lighting in Jamestown thirty years ago, I was called a dreamer for proposing that Jamestown be the pioneer in this field. A great hue and cry went up from corporation sources about "tax burdens," "waste of public money," "dangerous, socialistic experiments," etc., but the successful experience of our city has proved the unsoundness of these predictions. The city plant was originally built 32 years ago at a cost of $30,000. It is now valued at a million and a half dollars, with an indebtedness against the plant of less than 25 per cent of the inventory value. The assets of the plant have been created entirely from the profits realized from the commercial sales of electric current to citizens. Not a single dollar has been levied in taxes to pay for the plant or its operation. The income from sale of commercial service has paid all operating expenses, all interest on bonds, all repairs and replacements, and all necessary extensions to the plant from time to time, besides leaving a surplus, after deducting 5 per cent for depreciation, with which annual payments on bonds have been made. We have just installed a 5,000-kilowatt steam-driven generator, which makes the present plant capacity 10,000-kw.

The city has been able to do this after having given the people service at 75 per cent less than paid by consumers of current in cities supplied by privately owned plants. Our prevailing rate is 5 cents down to 1 cent per kw. hr., notwithstanding the excessive price paid for coal from which its power for current is produced. Not only has the city been able to return to its citizens the increased values of a municipal utility nearly paid for, but it has saved to the people during the past thirty years nearly five million dollars as a result of low rates for electric current. No one in Jamestown has any fear whatever that communism is going to overtake us, because this policy of sane municipal management is followed.

The city has succeeded in rendering this service in the face of keen competition from a Niagara Falls power syndicate, which acquired a franchise granted to a private company before the city plant was built. The municipality has forced the private plant to sell within the city limits at the same low rate at which the city supplies current, although outside of the city, where there is no municipal competition, the private rates are from 8 to 15 cents per kw. Notwithstanding the fact that the city must pay the market price for coal, it has continued its low rate while private corporations have continually demanded increases in rates.

Our method of management has stood the test of repeated investigations and audits by experts chosen by those who have been antagonistic to municipal ownership. We are now supplying current to nearly 9,000 consumers, most of whom are home owners.

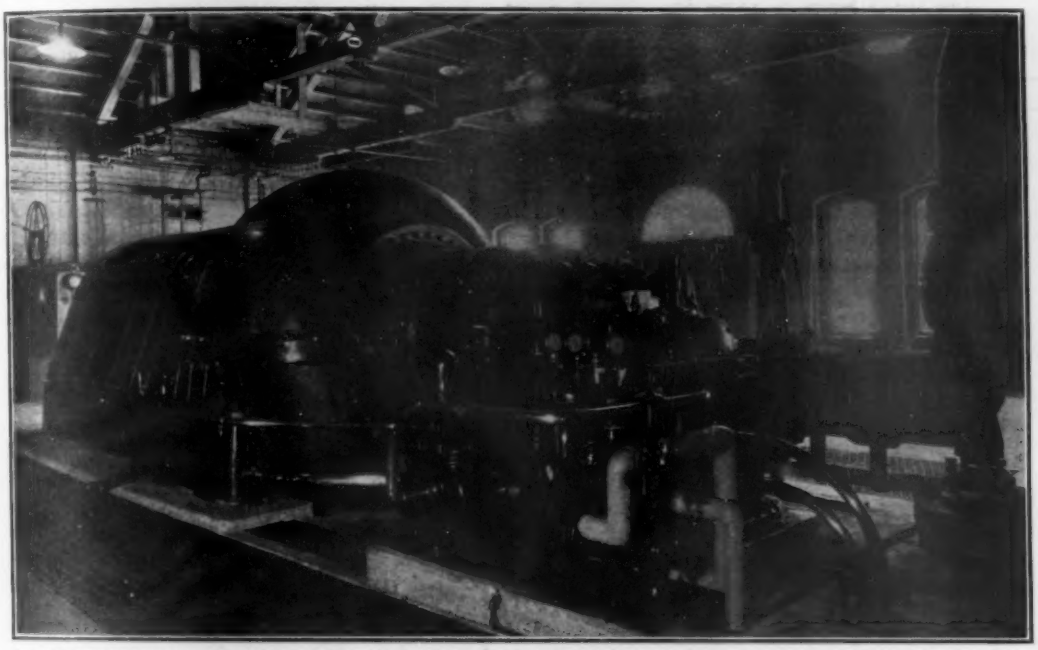
Last year our income was over $411,000; our expenses $266,561, which included all fixed charges, such as interest, depreciation, etc. We are able to produce these results in spite of the fact that the powerful syndicate, supplying power from Niagara Falls, is getting about half of the patronage in Jamestown. If the Jamestown plant received all the patronage within the city, and if the average rate paid in most cities prevailed in Jamestown, the profits would be sufficient to nearly wipe out the entire city tax levy.

Proposed Extensions

Having a surplus of funds on hand from profits derived, it is now proposed to make still further extensions so that an equipment of duplicate units can be provided, making a total capacity of about 20,000 kw. hrs. Hence the Board of Public Utilities of this city recently began further extension of their boiler-house and turbine-room. This extension includes the completing of the boiler-house building, which will double the size of the present

building, thus providing adequate room for the growth of the plant. The boiler-house when completed will have a ground floor space about 70 feet wide by 100 feet long. It will then be possible to house eight large-capacity boilers, and these will be so arranged that they will really constitute two separate boiler-houses, so that in case of failure on one side there would be still ample capacity on the other side to operate from. The present turbine-room is to be entirely dismantled and a new fire-proof building will be constructed around it. This building will have a width of 76 feet and a depth of about 100 feet.

In the construction of this building all of the automatic features and labor-cutting devices are being installed, and it is extremely interesting to observe the way the coal is handled from the coal cars on through the boilers. The coal is taken from the cars which are brought into the plant on a large concrete and steel trestle and dumped into a large hopper. It then passes through the crusher, which reduces it to the proper size for handling by the stokers. From here it is conveyed by belts and buckets to a large coal hopper which is located in the top of the boiler-house, where it is possible to store twelve cars of coal. This coal passes from the hopper into an electrically operated lorry where it is automatically weighed, and it is then passed into the hoppers of the stokers, where it is automatically passed into the fire under the boilers. As the coal burns, it travels on down the stokers until it comes to the ash grates, and here it is automatically dumped into a car which is in the basement of the boiler-house, this car delivering it to a skip hoist just outside of the building, which hoists it into a large receiver bin, and from here the ashes are taken and distributed on the city streets. A great amount of water is required in these boilers to be made into steam, and all of this water is taken from the creek and put through a very elaborate cleansing and softening system so as to prepare it for the boilers. It is delivered into the boilers through large high-speed centrifugal pumps. This water is also preheated before it is delivered to the boilers. The turbine room will be modern in every respect and when completed it will be large enough to house the generating equipment that will be required by this city for some time to come.



5,000-KW. GENERAL ELECTRIC STEAM TURBINE GENERATOR IN THE JAMESTOWN, N. Y., MUNICIPAL POWER-PLANT

Some of the modern features in this building are as follows: A large crane traveling the entire length of the building will be used to handle the various pieces of machinery that will be installed from time to time. A switchboard controlling the various electric circuits will be placed on the engine-room floor and will consist of nothing more than push buttons: the switches themselves will be housed in individual compartments, so that in case of failure

on the part of any switch, the possibilities of damage to the entire plant will be very small. In the gallery there will be an additional crane which will be used to interchange the various switching devices, when it is found necessary. In the basement off the turbine-room the large pieces of condensing equipment and circulating water pumps and other auxiliaries will be installed.

The largest individual piece at present installed in the basement of this building weighs over 44 tons. All the electric wires will be taken from the building through cable ducts and across the street, and from here they will be distributed by a large steel tower.

The entire plant is being constructed along the latest engineering lines, and every detail is being carried out to the finest point of perfection so as to assure the citizens that this plant will always be efficient and be able to take care of their demands for a good while to come. The Commissioners of the Board of Public Utilities have taken this step believing that the citizens of Jamestown have faith in their municipal electric lighting plant. This faith has been expressed conclusively by the fact that the growth of this institution has been steady, and they are sure that with the continued and increasing patronage of the citizens the municipal lighting plant will continue to grow and that the Board will be able to sell electric current at rates that will always enable the smallest householder to avail himself of the convenience of electrically operated accessories, and the large manufacturing institutions to avail themselves of an abundant supply of electric current, with which to further electrify their plants, thus eliminating the cost of considerable work now being done by antiquated methods. The buildings to be constructed will be of a very imposing type, for it has been possible to incorporate designs which will be pleasing to the eye as well as substantial structures.

Jamestown not only conducts its municipal lighting plant successfully, but also operates a water-supply system, a public hospital, a public market, and a gravel-pit as an auxiliary to municipal construction of all sewers and pavements without the contract system. All these enterprises are giving results and service at much lower cost than is obtained in cities in which such undertakings are privately controlled. The city has also a health clinic, a bacteriological laboratory, and extensive playgrounds connected with schools and parks. It has the largest commercial production per capita of any city in America, and its unrivalled percentage of home owners is evidenced by the fact that it has nearly as many taxpayers as it has voters.

The success of Jamestown's plan is due to the fact that there has been a continuity of administrative management and control, the present Mayor having been reelected eight times and now serving his seventeenth year. This has made possible a continuation in office of experienced heads of departments and commissions in control. These commissioners have never been appointed because of political affiliations or political pull, but solely because of merit. The present Board of Public Utilities which is in charge of all public business enterprises in Jamestown consists of the Mayor, three high-class manufacturers, and three capable engineers, all appointed by the Mayor, one of whom is Director of Public Works, and one Superintendent of Water and Lighting.

The legislative affairs of the city are under control of a City Council, one-half of whose members are elected from the city at large, and one-half from wards, on a non-partisan ballot. There is an absence of partisanship in the management of municipal affairs in Jamestown, and this accounts for the fact that greater achievements in public service have been secured in Jamestown than in those cities in which public business affairs are run by political party organization.

The war produced a psychology of public mind that has enabled reactionaries to make people believe that everything governmentally owned in peace time means dangerous communism, while in war time governmental conscription of everything, including human beings, is regarded as patriotism of the highest order. We hear much about the so-called failure of government operation of railroads, but nothing is said about the failure of private ownership of these railways during the early stages of the war. Nothing is said about the fact that practically the entire staff of the management of these roads during the war period consisted of men who did not want public ownership to be a success.

There is a flood of magazine and editorial propaganda against municipal ownership these days, and by subtle arguments it is sought to couple municipal ownership with bolshevism. But the thoughtful student of public affairs knows that there is no more danger of bolshevism in drafting utility systems for municipal service in peace time when adequate compensation is made for private initiative and investment, than there is in drafting men and resources for national service in time of war when sacrifice must be made without hope of reward for private initiative and investments.

Ten-Million-Dollar Loss Due to No Building Code

By Charles H. Cheney
Consultant, Santa Barbara City Planning Commission

THE terrible price that a city pays for not having proper building laws, inspection and enforcement was brought home in grim fashion to the lovely city of Santa Barbara, Calif., on June 29, 1925, when an earthquake shook down practically all the carelessly or badly constructed buildings in the city, with a loss of eleven people killed, twenty-five injured and property destruction conservatively estimated to be in excess of ten million dollars. Yet, severe as was this earthquake, practically all well-constructed buildings stood up, with slight or no damage, alongside of the bad construction which fell down. It wasn't only the new buildings which stood up—some old Spanish structures put up 100 years ago, that were well constructed, came through with little damage. Parts of the famous old Spanish Mission, including the beautiful towers, collapsed, disclosing clearly their faulty construction. It is the opinion of trustworthy construction experts that the towers would not have collapsed if the plans for these structures had been subject to good, modern city inspection.

Santa Barbara is a city of between twenty-five and thirty thousand people, on the California coast a hundred miles north of Los Angeles. Its unusually mild and even climate, the beautiful setting between the sea and the high mountains behind it, and the protection from storms given by the barrier of Channel Islands a few miles to the south, have made this the home of many of the foremost and most well-to-do people of America. Probably no small city in the country is better known. According to counts made by the City Planning Commission [illegible] over a year ago, there were approximately seven thousand buildings in the city limits, with another thousand in the outskirts. With an average of two chimneys per building, it was found that nearly seven thousand chimneys were cracked or destroyed, or almost half of all in the city and vicinity. Over 90 per cent of all the buildings are of frame construction and therefore would naturally come through the shake very well, except for their

THE BEAUTIFUL TOWERS OF THE OLD SANTA BARBARA MISSION, SHATTERED BY THE EARTHQUAKE OF JUNE 29, 1925, DISCLOSING FAULTY CONSTRUCTION

If they had been subject to a modern building code and proper inspection, experts say, they would not have failed. As it is, practically the whole front must come down

THIS MASONRY HOUSE ADJOINING THE SANTA BARBARA MISSION CAME THROUGH THE EARTHQUAKE WITH HARDLY A [illegible]

chimneys, and the city is now permitting chimneys to be reconstructed of metal flues fired out and covered with metal lath and plaster above the roof line.

"Skinned concrete," poor sand, insufficiently thick tile and brick walls, use of weak mortar, with too little or no cement and insufficient lime, poor bonding of walls and walls not tied in at the corners so that the building would vibrate as a unit, sham brick veneer walls, large water-tanks up on stilts not heavy enough to carry when vibrated, and hundreds of cases of buildings not properly inspected, or carelessly or dishonestly neglected during construction—all fell down in a few minutes, and the city discovered only too late that years of lack of having any building code was being paid for at a tremendous price of blood and money.

Every incorporated city and town in the country, no matter how small (and counties too, where there is sufficient authority), should take prompt measures to establish a proper building code, requiring good, safe construction, and with sufficient teeth in it to insure proper inspection and enforcement.

Revised Building Code and Fire District Ordinance

Santa Barbara has taken prompt measures to remedy the situation in a comprehensive way. Although the City Planning Commission and the Chamber of Commerce began over two years ago urging the adoption of a proper building code and zone ordinance, these two regulations were not passed until a few weeks before the earthquake. And now the experience of the earthquake is being compiled in a carefully amended code, at the direction of the City Planning Commission and the City Council. One of the first things done was to get a report from well-qualified structural engineers. It is expected that this ordinance will be passed shortly and will be available for other cities that wish to profit by Santa Barbara's experience and take precautions against similar disasters. The Council has already passed an emergency ordinance requiring all mortar used in the city to be composed of not less than five parts of good sand, by screen test, to one part of lime, slacked 14 days, and one part of cement. A fire district ordinance also has been adopted, making the central core of the city, where six-story buildings are allowed and part of the four-story district, a highly restricted fire district requiring masonry construction, and fire doors and windows where near adjoining building; a second fire district covering all the remaining business and apartment zones of the city (except the industrial districts) in which business buildings must be of masonry but apartments and dwellings may be of frame construction if they have fire-resistant exterior walls and roofs (that is, wire lath and stucco walls and tile, slate or gravel roofs); and a third fire district for the industrial zones, allowing heavy mill construction and galvanized iron sheds, or masonry buildings.

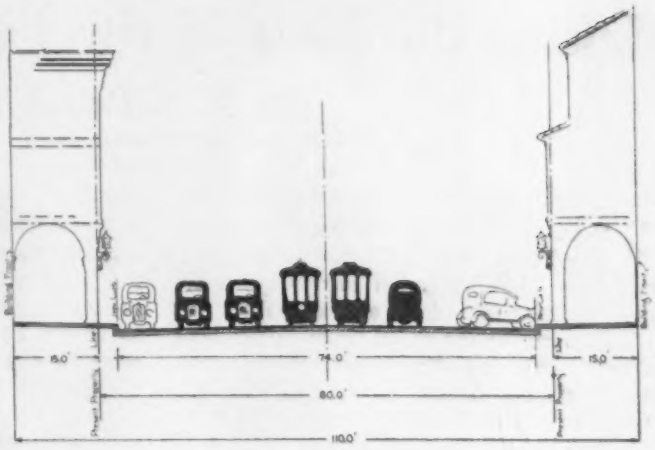
Despite this blow, Santa Barbara was carrying away the débris within a few hours after the earthquake. Within a few days, the City Council, the City Planning Commission and a committee of citizens appointed as a committee of public safety were organizing comprehensive plans for handling the situation, and for building the city on better lines. For some weeks the City Council met every day, and a splendid spirit of cooperation and determination was shown by every one. Great credit is due to Dr. Henry S. Pritchett, nationally known as the President of the Carnegie Foundation for the Advancement of Teaching, who makes his home here, and who accepted the chairmanship of the committee on finance; to F. F. Peabody, President of the School Board, who was in New York City on the day of the earthquake, ready to sail for Europe, but returned immediately to get the several destroyed or damaged schools in shape for opening in September; to Bernhard Hoffmann, President of the Community Arts Association and builder of the famous El Paseo (Street in Spain); to Dr. Rexwald Brown, President of the Chamber of Commerce and of the City Planning Commission; to Herbert E. Nunn, City Manager, and to the members of the City Council, and the many other prominent citizens who dropped everything else and gave their time to reorganizing the city. They have proved themselves big men, and the progress made and the many improved buildings that are going up only two months after the quake are an object lesson in community building for the whole country.

An Architectural Board of Review

Probably best known for its old California architecture, including the famous Spanish Colonial Mission and the newer groups so successfully designed in the same style, such as El Paseo, commonly called the Street in Spain, Santa Barbara has for some years been encouraging property owners to put up more buildings in this style. During the past two years this idea has met with splendid results.

chiefly due to the educational work of the Community Art Association.

When the quake wiped out most of the old and poorly constructed buildings, the town seized this disaster as an opportunity to rebuild, particularly on State St., which is the principal business thoroughfare. Immediately there was a strong agitation in the newspapers, among the clubs, etc., not only to rebuild in old California architecture, or in the "Santa Barbara style," as it has come to be called, but to go farther and arcade State Street. The Committee of Public Safety and the City Planning Commission, sensing this far-reaching opportunity, appointed a strong Architectural Advisory Board of some fifty prominent citizens. After all the architects and builders in the city had been called in, it was decided that the only way to get results was to have the city appoint an Architectural Board of Review to pass on every building permit issued by the city, raising the question with owners as to the style of architecture and quality of design of each proposed new building. Within three weeks after the quake the Council had passed an ordinance creating this board, to consist of three architects, nominated by the architects of the city, and two laymen, one to be nominated by the Community Arts Association and the other by the City Planning Commission. This board has power to hold up issuance of any building permit for twenty days, during which time the design of the proposed building is discussed with the owner. If by the end of that time the owner fails to agree with its recommendations, a public hearing on the disagreement must be held before the Council before a permit can be issued by the City Building Inspector. Up to the end of August several hundred permits had been passed on, practically every applicant had agreed to build in old California style architecture, and many of them also voluntarily built in the proposed recessed sidewalk arcades recommended for State Street and one or two other side streets.



SECTION OF STATE STREET, SANTA BARBARA, SHOWING RECESSED SIDEWALK ARCADES

This review of the city's new architecture and building permits is one of the most important advances made in any municipality in the country, because in almost all our cities more than ninety per cent of the buildings are designed by unqualified or incompetent people, chiefly by building contractors who do only as much designing as is necessary to get the job. City building inspectors everywhere tell us that less than ten per cent of our buildings are planned by competent architects. That is why we have so many dreadfully dull and tiresome city streets with reflected dullness of community interest. One town at least is determined to have things otherwise from now on.

Santa Barbara was fortunate in having completed and adopted a Major Traffic Street Plan, and a Park and Boulevard System Plan, besides a zone ordinance and building code, as a result of the past two years' work of the City Planning Commission; and they are now being followed and will probably be pushed much more quickly as a result of the earthquake. To carry these plans consistently into execution is the next duty of the various city departments. For this city at least, the tremendous price of its lesson for not having a building code is being turned to a real advantage, in building a better and more attractive community.

THE ART OF CITY-BUILDING

"This is the age of cities, and all the world is city-building. . . . In a dim sort of way many persons understand that the time has come when art and skill and foresight should control what so far has been left to chance to work out; that there should be a more orderly conception of civic action; that there is a real art of city-making, and that it behooves this generation to master and practice it."

—From *Greater Cleveland.*

Making the Most of the Fire Chief's Job

By R. O. Mesnar
Chief, Fire Department, Canton, Ohio

EVERY year the State Fire Marshal's Department sends out men to preach Fire Prevention. With our local department it is Fire Prevention every day in the year. Citizens should be on the lookout for hazardous conditions at all times rather than only one week annually. Get rid of your rubbish imediately instead of waiting for the city to do it for you once or twice a year.

Filling Stations

One of our city ordinances regulates the erection and installation of filling stations. A clause in this ordinance calls for the signatures of 66⅔ per cent of the property owners within a distance of 300 feet either way from a proposed site for a station. The owner of property adjoining the proposed site, knowing the hazard and also the fact that his insurance rate will be raised, will not sign, but the property owners who live 150 feet or more away will sign, and in this manner the adjoining property owners are overcome and the station is erected. Is this fair to the adjoining property owner? It is a well-known fact that a property adjoining such a station will not bring its true value when it is sold.

Through the summer months I receive complaints daily from property owners asking whether something cannot be done to stop this wholesale erection of filling stations. By ordinance there can now be stored as much as 3,000 gallons of gasoline in a tank, and some companies put in two or three tanks, so that sometimes there is an enormous amount of gasoline on hand.

When the Fire Chief signs a permit for a filling station, the city is responsible to a certain extent for the adjoining property. If the owner of an auto is in need of gasoline, he will not mind going a few blocks for it, so why is it necessary to have a filling station on every other block? The fire insurance companies consider these filling stations a hazard, as shown by the fact that they immediately raise their rates on surrounding property upon the erection of a station.

Fire Protection at Factories and in Business Places

Some of our large concerns have their own private fire companies in addition to their equipment of hose, hydrants, extinguishers, etc. A private fire company composed of employees will often hold a fire in check until the city department arrives. If the owners desire, I personally instruct any private fire company in the use of equipment. Drives to hydrants and the hydrants themselves should be accessible to the fire department at all times, and watchmen should be familiar with the drives and the location of the hydrants so that they can direct the city department upon its arrival. When installing hydrants, see that the mains are large enough to insure plenty of water.

Fire drills should be held, and extinguishers should be examined twice a year and refilled. Merchants should dispose of rubbish before it accumulates in quantity. Nothing inflammable should be piled on or near heating apparatus. Oily rags should be burned, to lessen the danger of spontaneous combustion. "No Smoking" signs should be strictly enforced.

Advertising Signs on Tops of Buildings

For several years I have been citing the handicap which may result when the Fire Department has to fight a fire in the upper

A Position of Vast Responsibility

To an increasing degree, the fire chiefs of American cities are giving intelligent thought, not merely to the fighting of fires, but to the preventing of fires. The head of the fire department in a modern city who senses the possibility of his job cannot escape a feeling of vast responsibility for the reduction of fire losses in his community.

The accompanying article is an abstract of a report recently submitted to the Mayor of Canton, Ohio. While all of Chief Mesnar's recommendations may not fit any other single city, some of the problems which are being studied by the Canton Fire Department are common to almost all communities. It is believed, therefore, that the ideas here presented are worth careful consideration by municipal officials and fire departments throughout the United States.

part of a building that has a large advertising sign on the roof. It would be necessary for us to put up extra ladders to get over and behind these signs with the fire-hose, and under certain conditions the firemen might be trapped behind a sign on the roof. Besides being unsightly, the signs are a nuisance. Some cities have ordinances which limit their construction, while others entirely forbid it. I have also found bad wiring on some of these signs, where it has been exposed to the weather and not cared for after being installed. Such defective wiring may become the cause of a fire.

Condition of Fire Apparatus

For several years I have been recommending the replacing of fire apparatus piece by piece every six months. Under such a plan the cost is not so great at any one time, but if the apparatus is neglected, some day it will be necessary to purchase a half-dozen or more pieces at one time—a great expense. It is difficult to get repair parts for old apparatus. In our department all apparatus is overhauled twice a year in our own shop. This repair work saves the city several thousand dollars each year.

Conditions at Schoolhouses

A state law requires that all curtains and draperies used in places of public entertainment shall be fire-proof and that the main curtain in front of a stage shall be of asbestos. Inflammable curtains catching fire in theaters have been responsible for much loss of life through panic.

Fire-alarm boxes should be installed in the interior of schoolhouses. The fire-drill gong should be audible in all departments. Cigarette smoking should not be allowed in the buildings. There should be no old-fashioned wood-boxes near stoves or furnaces. Fire extinguishers should not be left unfilled. All loose paper and rubbish should be burned or otherwise disposed of at once. All electric wiring should be in perfect condition.

Overhead Wiring

Overhead wiring is often a handicap to the fire department when raising ladders to a burning building. It means a loss of time, and is also dangerous to the firemen and to pedestrians who may come in contact with electric wires the insulation of which has been burned.

Fire-Hydrants

Attention should be called to the abuse of fire-hydrants. Contractors are allowed to put reducers onto hydrants so that they can get a water-supply while doing street work or erecting a building, and these reducers remain on throughout the day and night and over Sunday. In case of fire, the Department must first take off the reducer, which sometimes is a hard job and which causes delay in attaching our hose. The contractors often ruin the threads on the hydrants, which is also bad for us. Then, again, they pile building or road material over and around the hydrants, making them inaccessible. I have seen as many as four or five hydrants in a row which were almost useless to the Department in case of fire. Contractors should be required to take off these reducers over night and Sunday.

Not only the contractors, but the men in the Street Department, get careless and abuse the stems and threads of the hydrants. Some of the hydrants are in such condition that it is necessary for us to carry a monkey-wrench in addition to the regular plug-wrench. The difficulty is not that the firemen do not know how to handle the hydrants, for they are all schooled in this twice a week, and new men get additional instruction in turning hydrants on and off.

We have many single hydrants which should be replaced with three-way hydrants to include an engine connection. More hydrants should be installed in the outskirts. The Department has found it necessary on several occasions to lay as much as 2,000 feet of hose in order to reach a fire. And when installing new hydrants in the outskirts, the mains should be adequate to allow the pumpers a sufficient water-supply to work to advantage. A small water line must be torn up sooner or later and be replaced with a larger one, which is an added expense to the city, so why not lay one large enough in the beginning?

Parking of Automobiles

Autos are often parked side by side close together in such a manner that fire apparatus cannot get up to the building where a fire is and the firemen are compelled to stop the apparatus in the middle of the street and carry a line of hose or ladders between the parked autos as best they can, while the apparatus is blocking street cars and other traffic. Most of these parked autos are locked and could not easily be moved out of the road. How could we get our aerial up close to a building under such conditions?

The state law against parking at entrances to hotels, churches, and motion picture theaters is violated every day in our city, in spite of warning signs. The police should be instructed

to arrest all violators, and the latter should be heavily fined. Suppose a fire broke out in a moving picture theater or in one of the large hotels, would it not handicap us if we could not get our ladders and hose into the building until we had climbed over a lot of parked autos?

Even the police and city officials violate the ordinance which forbids parking within 10 feet of a hydrant. Factory owners, officials and employees are guilty of parking in front of hydrants at their shops and factories every day. What good is an ordinance if it is not enforced?

Right of Way for the Fire Department

As the auto traffic increases from year to year, so does the handicap to the Fire Department when responding to the fire-alarm. The people of our city do not seem to care whether the Department gets to a fire or not, but if it was *their* house or business place, it would be different. We have boys with bicycles who get in front of and between the apparatus and try to beat us to the fire. Should a boy while doing this fall off his bicycle, he probably would get run over and badly injured or killed.

Even some of our prominent citizens will try to beat us across a street intersection, and, having done this, will stand and watch us go by. There is also the fellow who will closely follow behind the apparatus with his car. Should it be necessary for the apparatus to make a quick stop, his chances for running into the rear end of the apparatus would be good. Some time ago a man ran into the rear of the hook and ladder truck just as it had stopped at a fire, and he broke several ladders and endangered several of the firemen who were about to pull the ladders off the truck.

We also have motorists who drive between the pieces of apparatus and race to the fire. If an accident happened to such fellows and their cars were injured, they would loudly demand damages from the city.

A good, stiff fine for violators of the ordinance which gives the right of way to the Department might improve conditions. There should also be more signals installed at street intersections to warn of the approach of the fire apparatus. With the increase of traffic they are absolutely necessary, and most cities have such signals in operation.

A Variety of Fire Hazards

Garages built in the basements of houses.—Such construction is not only a fire hazard, but a detriment to health on account of the fumes which come from the exhaust and pass through the floor boards into the house. An old barn used as a garage is a bad hazard. Garage heaters are often in bad condition.

Obstructed gas shut-offs at the curb.—These are sometimes covered with street material, sometimes in a depression which fills with water and freezes. Shut-offs should be accessible to the Department at all times.

Defective furnaces and pipes.—Corroded pipes, registers not properly installed with asbestos lining, furnace tops too close to the joints—all cause fires.

Defective fire-grates, chimneys and stacks.—The average fire-grate is nothing more than an ornament and safest when not in use. Vents are often put directly against lath or studding. Chimneys should be inspected by a competent bricklayer to discover holes where brick and mortar have fallen out. Tin flue-stops are dangerous. If a vent is properly installed between a factory stack and the roof or floors through which the stack passes, there will be little danger from this source.

Carelessness the Greatest Hazard

Carelessness covers almost all fire hazards. It includes allowing rubbish to accumulate; forgetting to shut off the electric iron; playing with matches; tossing away cigarettes and burned matches; smoking in bed; cleaning with inflammable fluids near a flame; neglect of many kinds.

Fire Prevention should be a daily thought with every one.

Child Hygiene Legislation of 1925

THE Children's Bureau of the U. S. Department of Labor, in a summary of current child welfare legislation in the states, reports the following: "Bills authorizing the employment of public-health nurses by municipalities and counties were passed in Kansas, Michigan, and Missouri. A Connecticut bill would provide for state aid in establishing a public-health nursing service. Bills relating to medical inspection in schools, school physicians, or school nurses, were introduced in Connecticut, New York (passed), Rhode Island, and Minnesota. Oregon passed a law requiring physical examination of all school children during the first month of the school year, providing no objection has been made by the parent. Bills improving birth and death registration passed in Michigan and Vermont, but failed in Maine. The status of such bills in Oklahoma and Pennsylvania is unknown. South Dakota passed a law requiring physicians and others to employ certain methods for the prevention of blindness and infections of the eyes of new-born infants. West Virginia introduced bills for licensing and registering midwives. Iowa and South Dakota passed new regulations for the control and inspection of maternity hospitals."

FIG. 1.—MODEL OF SENDLINGERTORPLATZ, MUNICH, AS RECONSTRUCTED

Traffic-Control Methods and Devices of German Cities

Notes and Pictures from the German Traffic Exhibition Held This Summer in Munich

By F. M. Wehner

Literarischer Buro, Deutsche Verkehrsausstellung, Munchen

MOTOR locomotion in Germany having increased enormously within the last eighteen months, our cities are faced somewhat suddenly with serious traffic problems. The more modern cities, of course, are able to adopt, with due modifications, those efficient devices which have already given satisfactory service under more exacting conditions in American cities.

Our older cities, however, have to begin by modifying their narrow old streets and ancient squares, their mediaeval city gates and fortification walls to meet the imperious demands of modern traffic, respecting withal their historic value and old-time significance.

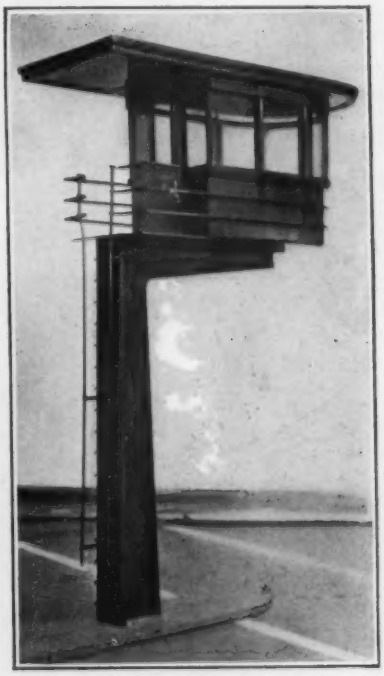


FIG. 2.—TRAFFIC TOWER, BERLIN

Munich, Nürnberg, Dortmund, Erfurt and Ulm are some of the cities where the municipal authorities have been doing some hard thinking along these lines. The results are exhibited in Hall VI of the Deutsche Verkehrsausstellung. Many and various are the drawings, plans and photos showing solutions of these difficult problems.

Fig. 1 is a model illustrating the corrections made to the Sendlingertorplatz. The arch of the old gate in the background has been suitably widened to permit easy passage of both street-car and automobile traffic, and safety zones of the raised concrete platform type have

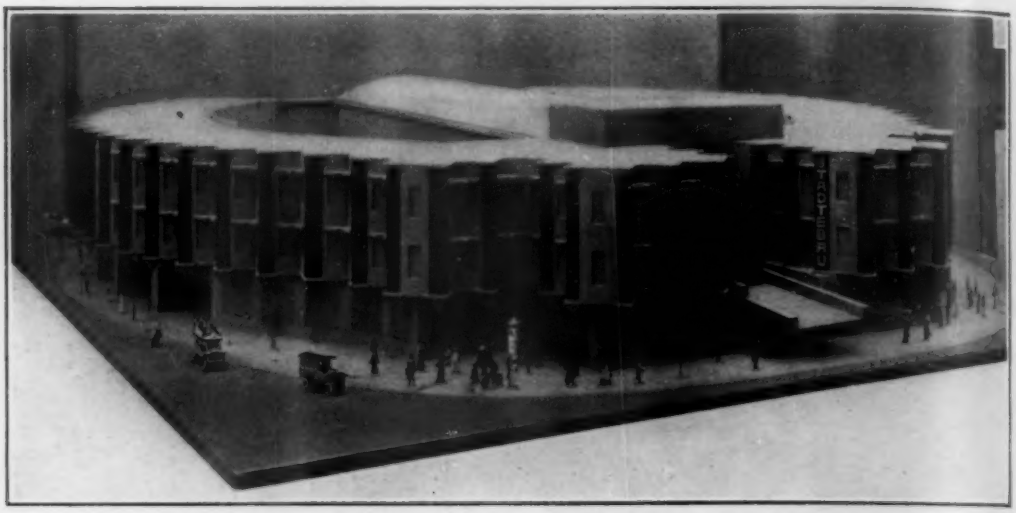


FIG. 3.—PROPOSED OFFICE AND SHOP BUILDING ON NOLLENDORF PLATZ, BERLIN, WITH ELEVATED AUTO ROAD

been built in such a way as to have the street cars stop on the inner side and to force the vehicular traffic automatically into the lines on the outer side which encircle the square in one direction only, indicated by the arrows. No counter-current is possible, all the traffic swinging off at a tangent from the central circle.

Berlin, too, though a moderately modern city, has its problems and tries to solve them in an original manner. Much has been said and written for and against the traffic-control tower on the Potsdamer Platz*, but the overhead-passage idea for pedestrians as suggested will certainly not enhance the looks of the square and has little chance of being adopted. Berlin is putting up more towers, one at the crossing of "Unter den Linden" Avenue with Friedrichstrasse and another at the point where the latter intersects Leipzigerstrasse. The tower there, shown in Fig. 2, is said to be "made to order," as it was impossible to put it into the center of the street on account of the overhead wires of the street cars. Its foot is set back into Friedrichstrasse, but the position of the operating box permits an easy view up and down Leipzigerstrasse.

Unlike Munich, Berlin does not seem to want to preserve its green squares in the city centers, but rather tends to avail itself of the precious sites for the erection of business premises. Fig. 3 shows the suggestion made for building over Nollendorf Platz, where pedestrian and local vehicular traffic encircle

*See THE AMERICAN CITY for August, 1925, page 181.

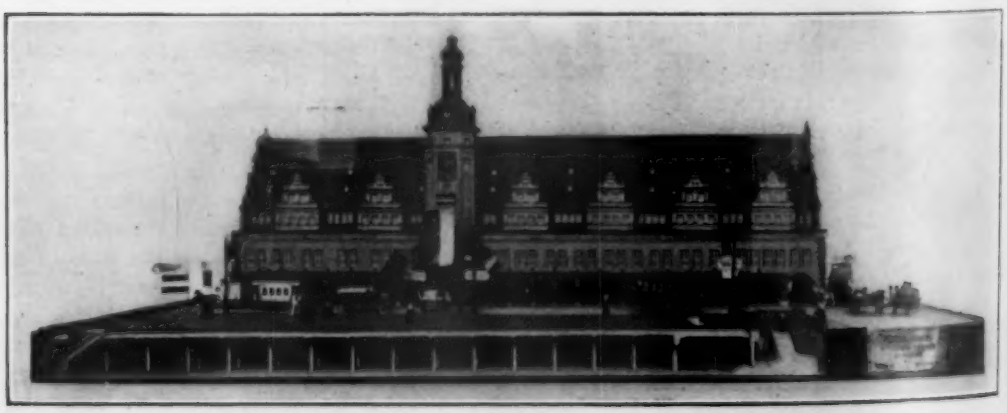


FIG. 4.—UNDERGROUND FAIR, BELOW THE MARKET SQUARE AT THE CITY HALL, LEIPZIG

FIG. 5.—CROSS-SECTION OF A MUNICH STREET

the building in two parallel lines, whereas the chief current of fast motor locomotion passes overhead right through the edifice. The peculiar construction of this building permits extensive advertising on long rectangular glass panes which are illuminated at night.

Leipzig, on the other hand, had no desire to do away with the open market square before the city hall, but nevertheless saw the advisability of making use of this central situation for business purposes. Consequently, the square was undermined and the subterranean space was fitted out as underground fair premises (Fig. 4).

Talking of underground work, we would not fail to mention the interesting cross-cut through a Munich street shown in our next picture (Fig. 5). The model as exhibited is one-third natural size and presents the different forms of street paving used in Munich, as

FIG. 6 (LEFT).—A COUNTRY ROAD TRAFFIC AND SIGN-POST

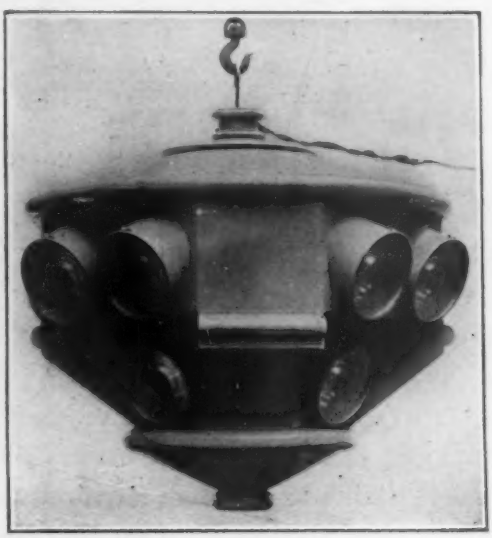


FIG. 7 (RIGHT).—TRAFFIC CONTROL SIGNAL FOR RECTANGULAR STREET INTERSECTION, BERLIN

well as the manifold subterranean pipes, drains and cables. Reading from left to right, we notice the low-tension cables with a connection box, the high-tension cables, 6-inch gas-main, cable canal of the Post Office (containing pneumatic-mail piping and telephone cables), surface hydrant, the 16-inch water-main and valve, high-pressure gas-main with "smell-pipe," snow drain, ventilating pipe and chief sewer, tram-rail drainage piping, street sewer with "mud pail," sub-pavement hydrant, 6-inch gas-pipe, street-car cables, low-tension lighting cables and telephone cables, rain drainage and household drainage.

Several interesting traffic-control devices are displayed at the Exposition by Messrs. Julius Pintsch A. G. of Berlin. Fig. 6 is a device used for country roads, combining flasher and sign-post in one unit, and Fig. 7 is a control signal for city crossroads.

Time Limits for Municipal Bonds in Michigan

UNDER the terms of the "Evans-Baxter Bill," enacted by the 1925 session of the Michigan Legislature, the periods for which bonds may be issued by counties, townships, cities, villages, or school districts are limited as follows:

"No bonds, except for subways or rapid transit or sewage disposal systems for cities, shall be issued for a longer time than thirty years, nor for a longer time than the estimated period of usefulness of the property or improvement for which the bonds are issued. The estimated period of usefulness shall be determined by a majority vote of the governing body of the municipality, and such determination shall be conclusive in any action or proceeding involving the validity of the bonds. Bonds for the purposes hereinafter specified shall not be issued for a longer time than the following, to-wit:

"1. Bonds issued in anticipation of special assessments, two years from the time fixed by law for the payment of the several installments of the assessment from which the bonds are payable.

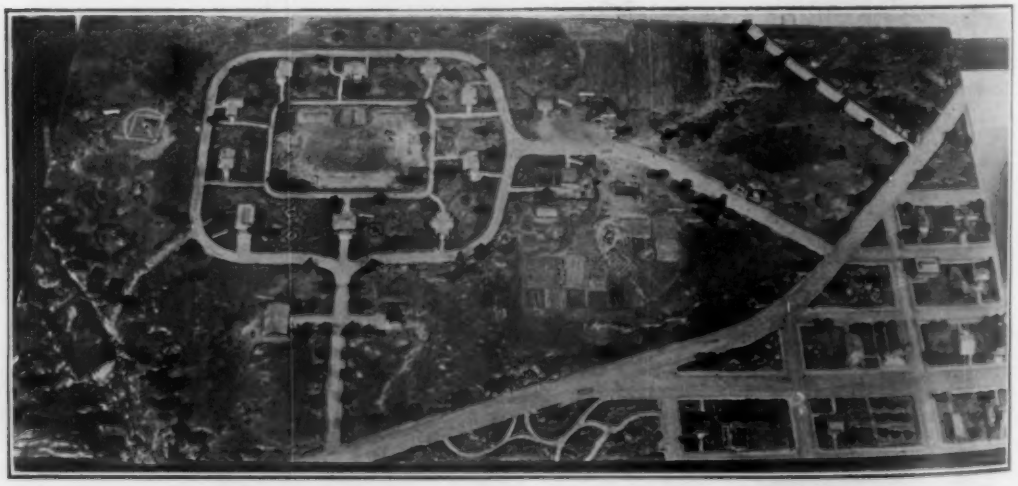
"2. Bonds for payment of judgments against the municipality and emergency bonds for relief from fire, flood or other calamity, five years.

"3. Bonds for the purchase of personal property other than material for permanent construction, machinery for public utilities or original furnishing and equipment of new buildings, ten years.

"4. Bonds for construction, opening, widening or improvement of highways, streets or alleys, fifteen years.

Model of Cottage Institution for Children

HOME is the best place for the normal boy or girl, states the Children's Bureau of the United States Department of Labor, but if an institution is necessary, aim to make it as homelike as possible. To take the place of the conventional orphan asylum, the Bureau urges the construction of a "cottage institution," where the children may live more like other boys and girls, in attractive small houses with a house mother for each building. A model of such an institution, a photograph of which is here reproduced, has been constructed for the Bureau and is now on display in Washington. Playground, gymnasium, swimming pool, isolation cottage, administration building, laundry, power-plant, superintendent's cottage, and farmer's cottage are included in this model, which is planned for the outskirts of a town in which the children may attend school and church.



THIS COMMUNITY OF HOMES FOR ORPHAN CHILDREN IS SHOWN IN MINIATURE IN WASHINGTON, D. C.

The Pueblo Conservancy Project

Cooperation Makes Vast Improvements Possible at Considerable Saving to City

By Earl C. McCain

WILLINGNESS to meet the other fellow half-way is often the key to success in municipal problems, and it likewise reacts to the benefit of the people. At Pueblo, Colo., where a big four-million flood prevention project is being completed, the three City Commissioners have saved the taxpayers thousands of dollars and much inconvenience through their cooperation with the directors of the Conservancy District in the arrangement and construction of bridges.

At one point, where the Santa Fé Trail enters Pueblo, the city is receiving a splendid bridge and subway entrance without cost. At another point it has been allowed to construct a magnificent highway bridge on the side of a concrete railway bridge. The cost of this bridge as constructed is only $16,000, and engineers estimate that it would have cost $25,000 if built on its own piers and abutments. In a third instance, a bridge and a viaduct that connect the north and south sides of the city are being built jointly in less than one-half the time that would have been required to carry out the work separately.

Not only has this cooperation resulted in a great saving of money to the city, but it has enabled the Conservancy project to be rushed to completion one year ahead of schedule. Five years were required to construct a similar work in the Miami River Valley in Ohio, and it was estimated that at least three years would be required to complete the Pueblo project. But because of the splendid cooperation that exists among the directors, city officials, railroads, and contractors, the city will be safe from all except the rarest large floods by June 1, 1925.

Creation of the Conservancy District

The Pueblo Conservancy project resulted from the great flood of June 3, 1921, when a mighty deluge of the Arkansas River cost the lives of more than 100 persons and destroyed property valued at $20,000,000. Immediately after the disaster a number of prominent citizens, including the three City Commissioners, formed a Committee of Twelve whose duty was to work out plans for the recovery of the city and its future protection from floods.

One of the first steps of this committee was to engage Arthur E. Morgan, well-known flood-control engineer, to investigate conditions and work out flood-protection plans. Following this, the Pueblo Conservancy District, including the city and surrounding portions of the county, was created by an act of the Colorado Legislature, and the control of the District was vested in three directors.

Although several different plans were possible and even considered, that of moving the Arkansas River to a new location, where it would have sufficient capacity for a greater volume of water than that of the flood, was the only one that assured complete and permanent protection. While the project consists of 49 separate contracts, the most important and the "key" to the entire plan is this

SINGLE-SPAN HIGHWAY BRIDGE CROSSING THE NEW RIVER CHANNEL OF THE PUEBLO CONSERVANCY DISTRICT AT SANTA FE AVENUE

This bridge is 280 feet long and 44 feet wide. The new channel at this point is 250 feet wide and 37 feet deep

new river channel.

In working out plans, the chief problem that confronted the engineers was the location of the river and the fact that it would have to be changed into an artificial channel without serious interference to railroad operation and the industrial activity of the community. The stream entered the city on the west, and, as nature had guided its course, wound through the manufacturing section and the railroad yards.

The flood of 1921 had demonstrated that the old channel, 150 feet wide and having a capacity of only 35,000 cubic feet per second, was inadequate to cope with flood conditions. The fact that huge industrial plants and valuable business establishments stood on both sides of the stream made it impracticable to widen the old channel.

The southern residence section of the city stands on a great mesa, about 50 feet higher than the level of the river. The edge of this mesa, a row of bluffs, extends almost on a straight line through the city from the point where the river enters it on the west. Here it was possible to construct a channel of sufficient capacity to safeguard the city and, at the same time, to straighten the course of the stream.

At first there were many objections to the new channel plan. It involved the removal of many railroad tracks; extensive changes in the public utilities; the building of many new bridges; the buying of much private property; and the construction of a great levee through the heart of the city. The estimated cost was $4,000,000, and many persons, unfamiliar with engineering and construction, objected to spending this amount. But the plan meant safety from floods, something that was vitally necessary to the existence and growth of the city, and it was adopted.

Pueblo Now Protected from Flood

The Conservancy work was started in March, 1924, and on May 15, 1925, the Arkansas River was turned into its new channel. This channel is 256 feet wide, 30 to 36 feet deep, and has a capacity of 125,000 cubic feet per second; about one-third more than the water of the great flood of 1921. While some portions of the work will not be completed for some time, the turning of the stream into the new channel means that Pueblo is now practically safe from flood.

The greater part of the south wall of the channel is formed by the edge of the mesa. The north wall is formed by a great concrete-paved levee, 30 to 40 feet high and 2.4 miles long. All the way through the city and at all other points where there will be any pressure from the current at flood times, the levees are paved, including a 6-foot foundation below the water-level, and a 3-foot guard curbing on top. The cost of this levee paving alone is $560,000.

The excavation for the new channel was a big job, involving the moving of 1,000,000 cubic yards of earth and costing $588,900. Draglines and steam shovels were used for excavating, and construction trains hauled the rock and earth to a point west of the city, where it was used in the construction of a new railroad yard. At one point along the channel, opposite the union station, it was necessary to cut into the bluffs along the edge of the mesa for a distance of 500 feet.

Grafting a Highway Bridge onto a Railway Bridge

From the municipal standpoint, perhaps the most interesting feature of the Conservancy project is the concrete bridge over Dry Creek, an important tributary of the Arkansas River west of the city. Here a splendid highway bridge, 285 feet long and with a roadway 20 feet wide, has been literally grafted onto the side of a railway bridge. This was accomplished by extending the north end of each pier and abutment beyond the north wall line of the main bridge, thus forming ledges. Directly opposite each ledge, concrete column piers were sunk to bed-rock. The highway bridge rests on these columns and pier-ends, and has the same approximate strength as the railway bridge.

An outstanding feature of the Dry Creek bridge is that it stands directly in the path of possible floods, and that its own north, or upstream, wall must act as a retaining wall at flood time. Ordinarily, in spanning a stream that is subject to flood, the object is to permit the flood to pass under the bridge. But since four main-line railroads had to pass over this bridge, and the railroad engineers refused to approve a plan calling for sufficient elevation to be above flood height, the engineers faced the problem of designing a bridge that would be safe from flood while directly in its path.

The railroads and the highway on one hand and the stream to be spanned enter the city at right angles. The railroad bridge is supported by four narrow piers and two abutments, and consists of five 40-foot reinforced concrete spans. The highway bridge, being 85 feet longer, has two additional piers. The floor of the highway bridge is 6 feet higher than the floor of the railroad bridge, since the matter of elevation did not matter in this bridge.

The north wall of the highway bridge, 6 feet in height, and the substructure supporting it, act as the first retaining wall in cases of extreme flood. But so firmly are the two structures built and tied together that they have equal strength.

The floor of the highway bridge is 13 feet above the level of the stream, and it is estimated that it will scour 10 feet deeper in case of flood. The floor of the railway bridge is 6 feet lower, but even the lowness of this bridge will permit the passage of 25,000 cubic feet of water per second, which is considerably more than is ever expected to come down the stream. The road crossing the highway bridge is one of the principal highways from the west and connects with the Rainbow Trail.

PAVING THE LEVEE SLOPES IN THE PUEBLO CONSERVANCY DISTRICT

The levees enclosing the new channel of the Arkansas River are 30 to 40 feet high and the paving slope is 1½ to 1, 10 inches thick and 68 feet wide at the highest point of the levee

The same flood that made necessary the Dry Creek railroad bridge destroyed the highway bridge at this point and made it necessary for the city to provide another bridge. The flood had demonstrated the terrible power of the creek at flood times, and various estimates of a bridge to span the creek indicated that such a bridge, on its own piers and abutments, would cost not less than $25,000. Knowing the willingness of the directors to cooperate in every way possible with the city, the matter of constructing a highway bridge on the side of the railway bridge was considered, with the result that the taxpayers have been saved $9,000 on this bridge alone.

Cooperation Builds Bridge and Viaduct at Same Time

On the Union Avenue bridge and viaduct, connecting the north and south sides of the city, the most important saving has been in time of construction. An old viaduct, already restricted as to loads because of its condition, spanned the railroad tracks at this point. The flood-prevention plans required that the new channel be located just south of this viaduct, the district was required to construct a bridge across the new channel, but it had no power Under the provisions of the Conservancy Act, to compel the city to build a new viaduct.

It was realized, however, that it was a question of only a few years until a new viaduct would have to be built. Owing to the fact that Union Avenue is the main thoroughfare of the city and likewise of two great cross-country highways, this would have meant a second great tie-up of traffic, including a change on all street railway lines. Again the cooperation existing between the City Commissioners and the directors came into play, with the result that the bridge and viaduct contracts were let at the same time and to the same contractor, who was offered a bonus of $4,000 to complete the work in seven months. The double job was started November 1, 1924, and was opened to traffic on May 15.

While the two jobs are being carried out simultaneously, the contracts are entirely separate. The bridge is of steel, and consists of two spans each 124 feet long, connecting with a 20-foot slab and girder section that rests against the south abutment. The bridge has but one pier, resting in the center of the channel. This pier is 42 feet in height, resting on bed-rock, and tapers from 13 feet at the base to 5½ feet at the top. The bridge is of the deck truss type, and painted battleship gray so that it conforms in color and appearance to the concrete viaduct.

The viaduct is 350 feet long, and rests on two abutments and five piers. Owing to the location of the tracks underneath, these piers are at irregular intervals, ranging from 19 to 55 feet apart. The viaduct and bridge have a paved roadway 44 feet wide, with an 8-foot sidewalk on either side. They carry a double-track street railway, water- and gas-mains and telephone conduits, and are lighted by fourteen ornamental light poles.

The total cost of the bridge and viaduct is $210,000, of which the Conservancy District

is paying $110,000. The remainder is being paid by the city, the Union Depot Company, the railroads and the public utilities. The total cost is approximately $35,000 under the engineer's estimate, the bids being so low because a large number of contractors, having their equipment in Pueblo for the main Conservancy work, were anxious to obtain the bridge and viaduct contract.

The viaduct is heavily reinforced, 275,000 pounds of reinforcing steel being used in it. One-inch steel bars were used in the construction of the piers and abutments, and the entire floor is reinforced by a network of ½- and ⅝-inch steel bars crossing each other at 4-inch intervals. The sidewalks at either side are enclosed by artistic and serviceable railings.

A Single-Span Bridge Over the New Channel

One of the most impressive bridges in the Conservancy District is the Santa Fé Avenue highway bridge, at the lower outskirts of the city, where the Santa Fé Trail enters from the east. Here a massive single-span bridge, 280 feet long and 44 feet wide, spans the new channel. It is just below this bridge that the Conservancy work ends, and the concrete-paved levees on both sides of the river are 37 feet high. Owing to the fact that the channel at this point is slightly narrowed, the water, in case of flood, would race through it with terrific velocity. Because of this, it was considered inadvisable to have even one pier in the channel.

The Santa Fé Avenue bridge is supported by huge concrete abutments, built inside the levees and resting on bed-rock 30 feet below the channel level. This is one of the longest single-span bridges in the West, and the fact that it has no piers to offer resistance to the current means that it will never be affected by any flood within the range of probability.

This bridge was provided without expense to the city, since the changing of the river required the Conservancy District to provide an entrance from the Santa Fé Trail. Its total cost was $100,000, and it was opened to traffic April 15.

About a half-mile north of the Santa Fé Avenue bridge the avenue crosses the old river channel, where the stream is also spanned by bridges of the Santa Fé and Missouri Pacific Railways. The turning of the new river into the new channel will enable the Conservancy directors to provide a 25-foot wide subway through the old channel under the tracks, also without cost to the city. This eliminates two dangerous crossings.

Another bridge and viaduct on the west side of the city will represent the Conservancy District's gain from the cooperation existing between it and the city. At this point three old bridges which spanned the old river channel inside the city will be used by the Conservancy District, together with a two-span steel bridge across the new channel, to form a bridge and viaduct 918 feet long. This will span the new channel and the tracks leading to the new railroad yards on the west side of the city. It will be an interesting structure, in that every bridge used in its construction has been moved once or more, the two steel spans now in place having been moved here years ago from Iowa, where they formed a railroad bridge across the Des Moines River.

Asphaltic Concrete Road Construction in Michigan

Secondary Roads Built Up on Macadam or Gravel Foundation

In its search for a more economical, as well as more durable, type of highway, the state of Michigan has installed a state-owned asphalt plant and has begun the construction of asphaltic concrete highways on gravel or macadam foundations. This type was adopted in order that the original investment in the old roads might, as far as possible, be retained. The Michigan Highway Department's first asphaltic concrete pavement was laid on a 7½-mile stretch of the Gull Lake Highway running from Richland southwest to Kalamazoo. In the village of Richland 6/10 of the road formerly was macadam, and the remaining 7 miles was constructed as a gravel highway.

In building this highway the engineers first treated the gravel with a bituminous surface treatment to serve as a bond for the asphaltic concrete surface. The latter was laid to a depth of 2½ inches. The project was in charge of W. E. Grayson, Engineer for the State Highway Department, and 45 men were engaged in the work. The highway was completed in about three months' time and is now open to traffic.

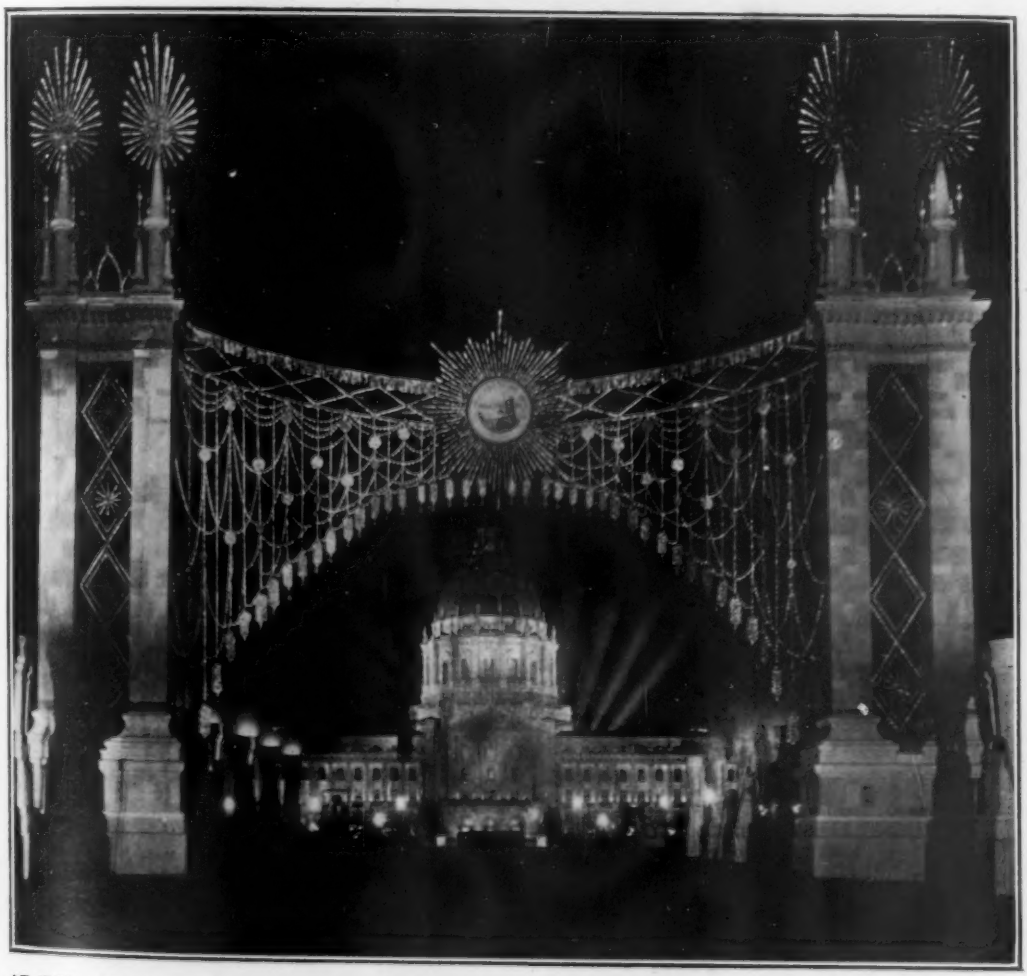
The extent to which this type of pavement is adopted by the State Highway Department depends upon its behavior under climatic changes and traffic impact. Upon the recommendation of Frank F. Rogers, State Highway Commissioner, the same type of pavement is to be laid on a 10-mile stretch of road in Sturgis and Fall River Townships, St. Joseph County.

Spectacular Illumination Features San Francisco's Diamond Jubilee Week

IN celebration of the seventy-fifth anniversary of California's admission to the Union, San Francisco was a blaze of glory September 5 to 12. More than $100,000 was spent in making the lighting a feature long to be remembered.

Two radio panchromatic fountains interpreted broadcast music in motion and color: the City Hall Plaza was floodlighted and topped with an aurora borealis; cartouche and banner-bearing standards lined the streets; and streamers of lights were strung along the "Path of Gold" or Market Street. A Diamond Jubilee arch was erected at the approach to the City Hall Plaza; flambeau standards bearing flaming torches were erected at the entrances to the city; trees and shrubbery were adorned with incandescent lamps; and Chinatown was decorated with lighting standards of an oriental design.

The spectacular illumination was designed by the Illuminating Engineering Laboratory of the General Electric Company, under the direction of W. D'A. Ryan, who designed the lighting at the Panama-Pacific Exposition, the colored illumination of Niagara Falls, the lighting features of the Brazilian Exposition, and numerous other events.



AT THE APPROACH TO THE CITY HALL WAS THE ARC DES BRILLIANTES, STUDDED WITH 40,000 SPARKLING JEWELS

The Diamond Jubilee Arch

The Diamond Jubilee jeweled arch was of Spanish Gothic design, 81 feet high and 102 feet wide. Between double towers at either side were suspended a dazzling necklace or laced streamers made up of 40,000 Novagem jewels, bearing a sunburst carrying the seal of the state in the center. Atop each tower were other sunbursts of sparkling jewels.

The jewels, each carefully hand cut like a diamond and two inches in diameter, sparkled and radiated all the colors of the rainbow in the sunlight by day and from the rays of a battery of 30 powerful searchlights by night. These jewels were made from special imported glass having an index of refraction or scintillating value about half-way between the best commercial glass and a diamond. The searchlights were equipped with several color screens, operated in such a way as to make the entire spectacle take on an appearance of ever-changing wonder and mystery.

Flanking the arch were twenty great steam altars, emitting vapor of soft and delicate colors, ten on each side, extending 300 feet.

The Radio Fountains

Perhaps the most novel of the jubilee spectacle features were the radio panchromatic fountains. By means of radio devices invented by General Electric engineers, the water in the fountains can be made to rise and fall according to the intensity of the radio waves received from any broadcast station. In the San Francisco installation, special radio broadcast instruments were installed on the park band-stand, so that the fountains could also be made to keep in perfect rhythm with the music played a few feet distant. Colored floodlights were played on the water.

Big Bond Issues in Toledo and Kansas City

THE voters of Toledo, Ohio, will ballot this fall on bond issues aggregating $32,500,000, to cover a program of eighteen major public improvements approved by the City Council upon recommendation of the Toledo City Plan Commission. These eighteen referendum proposals will be presented separately to the voters so that each may stand on its merits. If approved by the required 55 per cent vote, these bonds will be sold from time to time over a period probably of the next ten years.

Following are the issues to be voted upon:

Grade crossing elimination	3,000,000
Street paving	3,000,000
Boulevards	3,000,000
Harding Bridge	3,000,000
Water-works extension	2,500,000
Real estate—Civic Center	2,500,000
Widening streets	2,000,000
Parks	2,000,000
Sewage disposal	2,000,000
City Hall	2,000,000
Canal Boulevard	1,750,000
Fire buildings	1,000,000
Bridges	1,000,000
Intercepting sewer	1,000,000
Police and fire signal system	500,000
Park buildings	250,000
Heating plant, Civic Center	500,000
Port development	1,500,000
	$32,500,000

An ambitious program of improvements, involving an expenditure of $25,535,000, is also contemplated in Kansas City, Mo., the Kansas City Public Improvement Association having approved and submitted to the Common Council the following list of proposed bond issues:

Fire Department	$1,200,000
Municipal Farm	35,000
Parks, general	2,300,000
Enlarging Penn Valley Park	200,000
Public Square opposite Union Station	2,000,000
Beautifying Swope Park	1,000,000
Revolving fund for public improvements	1,500,000
Park and parkway on Blue River	1,000,000
Municipal Auditorium	800,000
General fund deficit	2,250,000
Police Headquarters and Municipal Court Building	250,000
Free bridge over Missouri River	1,500,000
Municipal Aviation Field	400,000
Viaduct on Washington Park Boulevard	1,100,000
Public trafficways	7,500,000
Traffic signals	150,000
Water-mains	1,000,000
Reconstructing bridges and viaducts	100,000
City's hospital system	1,200,000
Municipal Tourist Camp	50,000
	$25,535,000

If approved by the Common Council, it is expected that the proposed bonds will be voted upon at the general city election on November 3.

Real Estate Association Recommends 100-Per Cent Valuation

ACTION taken by the Pacific Northwest Real Estate Association at its annual convention this summer is one of several movements among real estate associations to put into effect the program for tax adjustment formulated by the National Association of Real Estate Boards at its annual convention in Detroit in June.

In resolutions indorsing in full this program for tax adjustment the Pacific Northwest Association made the following recommendations to the legislatures of the states in that region:

1. That property be assessed at a 100-per-cent valuation.
2. That classification of property be made for taxation purposes.
3. That estates be subject to but one inheritance tax and that one to be collected by the Federal Government.
4. That real estate be taxed for county, city and school district and other local purposes only, unless other sources of revenue prove insufficient.
5. That operative property of public service corporations, the property of insurance companies, the shares of stock of banks and all franchises should be taxed for the support of the state alone.
6. That all states that have not already done so provide definite tax limits or specifically instruct their assemblies to enact tax limit legislation.

Successful Tests on New Incinerator at McKee's Rocks, Pa.

Twenty-Two Tons of Garbage Consumed in Two Hours in Specification Tests

THE latter part of May of this year the new garbage incinerator at McKee's Rocks, Pa., was placed in service and given its official tests. The tests proved that the incinerator was all that was claimed by the designer, and it more than met the specifications drawn up for the plant. Although the disposal plant had been in use for several days and had run satisfactorily prior to May 21, the contractors, the Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa., and members of the Council decided upon a test that would require the plant to reach the maximum called for in the specifications. Accordingly, 22 tons of wet garbage was collected on the charging floor ready to start the test at 9:15 A. M.

At 10:35 A. M. the workmen had cleared the floor of the charging room and the 22 tons of test garbage had reached the four hearths of the two furnaces. During this time rubbish was used for fuel. The temperature was increased until the pyrometer reading indicated 2,200 degrees. This temperature was satisfactory, since more than 1,500 degrees is not required by the specifications nor considered necessary by the engineers of the plant. The combustion was so complete that no gases were visible in the combustion chamber and no unburned gases or waste were being given off from the stack.

GENERAL VIEW OF McKEE'S ROCKS INCINERATOR, SHOWING RAMP

The 22 tons of garbage was consumed in two hours. This was at the rate of more than

DUMPING FLOOR OF NEW McKEE'S ROCKS INCINERATOR

CHARGING FLOOR OF INCINERATOR

10 tons per hour. The guaranteed rate is 5 tons per hour, so that the plant operated at double capacity. This capacity and performance is due to the proportioning of the furnace parts, grates, drying hearths, flues, stacks, etc., all of which are larger than required, to conform with guarantees to allow the borough to incinerate more than 40 tons in 8 hours. The stack is of radial brick, with fire-brick lining, 90 feet high and 6 feet in diameter. The engineers claim that the stack will give a satisfactory draft under all conditions, but nevertheless a motor-driven fan has been placed in service to create an excess draft and accelerate combustion. This fan is the only mechanical contrivance in the whole plant and is located on the top floor above high-water stage, to prevent damage.

The building is located adjacent to the stack and measures 32x44 feet, is two stories high, and contains the two furnaces with flues, ducts, dampers, and all appurtenances. The first story is of concrete, and the second story is brick. All floors are of concrete. The roof is of tile on steel supports. A number of large steel-sash windows give the inside of the building plenty of light and ventilation on both floors. In addition to this, however, there are two large metal doors that make everything accessible and convenient.

Operation

The refuse is delivered to the top floor by trucks and is passed to the drying hearth of the furnaces through large openings in the floor. On the lower floor the two furnaces are provided with doors for observation and for stoking the material from the hearth onto the burning grates. Back of the two grates are two large combustion chambers where complete mixing and burning of the gases occurs. The gas is then passed through the flues to the stack and carried off.

The furnaces and flues are brick, interior and exterior, with a heavy wall of Sil-o-cel brick between the two layers, which prevents radiation of heat and uncomfortable temperatures for the workmen. The furnaces are capable of handling refuse carrying metal, ashes, glass, etc., but a sufficient amount of combustible materials must be used to secure combustion. Metal, cans, and ashes have no deteriorating effect on the furnaces.

Two men, with one additional in the rush season, will be ample to operate the incinerator, and only one of the two furnaces need be used until the borough arranges to secure double the amount of refuse now collected.

Construction

The disposal plant is located near the site of the old incinerator erected some years ago, which proved to be a failure. The site was purposely chosen to prevent objections by property owners, although the contractor claims that it will prove to be no nuisance, since no fumes or smoke are caused by this type of furnace.

The furnace is known as the United States Standard incinerator, which is the type developed by the United States War Department at its various camps during the last ten years. It is built in accordance with patents held by Edgar B. Kay, Civil Engineer in charge of construction for the War Department, who prepared the plans and specifications. It is one of several plants of like type that are now being built by the Pittsburgh-Des Moines Steel Company, since the Government granted the right to municipalities to use the plans.

The building, furnaces, and stack are all constructed of brick, steel, and concrete, and the plant is entirely fire-proof. Owing to the unsatisfactory soil conditions at this point, it was necessary to support the structure on 58 concrete piles driven 25 feet below the foundation. The ramp approaches are made of cinders graded to an easy slope.

Plan to visit the Road Show, Chicago, Ill., January 11-15, 1926

Snow Removal from City Streets---Part I

By Leonard W. Russell
Department of Streets, Worcester, Mass.

THE handling of snow is an expensive operation, especially when it becomes necessary to remove large quantities from heavily traveled streets. It is a very unsatisfactory kind of work, as it is accomplished only with a large expenditure of money and energy, and leaves nothing behind to apparently justify the effort.

The man in charge of snow removal in a city is in much the same position as a general commanding a field army. He has precedent to follow, but rapidly changing weather conditions, together with the problems inherent to snow removal, make such a varying proposition that he must be not only experienced, but capable of quickly adjusting himself to varying conditions and, above all, must be a weather prophet. He must know what streets to open up before others because of traffic conditions; he must appreciate the congestion caused by clearing street-car lines and pushing the snow to the side of the tracks and by the shoveling of sidewalk deposits out onto the traveled way; and he must know where small-sized lakes will form because of low grades.

A FLEET OF CATERPILLAR AND CLETRAC TRACTORS EQUIPPED WITH V-TYPE PLOWS AND WINGS, MAKING A VERY GOOD MEDIUM WHERE THE SNOW HAS NOT BECOME FROZEN

Know When the Storm Is Coming

Anticipation of storms is a great aid in determining the nature, severity, and probable time of their arrival. This can be accomplished by watching weather reports, and barometers and by using the radio, telegraph, or telephone in cooperation with other cities and towns. The general course, speed, type, and severity of storms may be traced as they proceed. Advance news of the approach of a storm can be broadcast from suitable sending stations far enough ahead so that several hours' time may be obtained in which to prepare. In large communities, one man, provided with proper equipment, can be very profitably employed during winter months in watching the storms. If weather news is broadcast by radio, a receiving set can be tuned in so as to catch the information from some central station. This set should be at the residence of the local weather bureau official, so that it

may be used both day and night, thereby eliminating the expense of extra employees, which would otherwise be required. The weather forecaster, for a slight extra compensation can handle the situation with the aid of the adult members of his family. A large map of the United States can be mounted and, by use of pins with different-colored heads, the various kinds of storms can be accurately traced. By the use of a chart showing the time that storms pass certain points on the map, their speed and probable arrival time can be closely estimated.

Plan Attack in Advance

The greatest secret of handling snow-storms is to have a practical, comprehensive plan of action laid out in advance and to tackle the storm while young and hang onto it until the work is completed. Two inches of snow can be easily handled, but two feet of snow means the expenditure of a great amount of money for its removal, so that it should not be allowed to accumulate. Labor forces should be arranged in shifts under competent supervision.

To properly determine the correct sequence of handling different streets and types of storms, it is necessary to make certain classifications of storms. This is rather difficult to do, because different types often blend into a composite storm. In such a case, proper control and supervision soon institute the necessary changes that are required to successfully combat it. In Worcester, Mass., the storms could be divided into eight divisions as follows: Class A, heavy rain-storms which wash streets badly; Class B, slush-storms; Class C, slippery streets and walks caused by a sudden freezing following a thaw or rain; Class D, light snow up to a depth of 4 inches; Class E, heavy snow that requires removal; Class F, blizzards with very heavy snow; Class G, heavy ice-storms that litter streets with trees, limbs, poles, and overhead wires; Class H, great and unexpected emergencies, such as earthquakes, great conflagrations, etc.

In making a study of storms, particular attention should be paid to preventing the washing of streets and the drifting of snow. The proper surfacing of a street, aided by a substantial gutter, will often reduce the rush of water by distributing it more evenly over the whole road surface and then gradually fanning it out until it is conducted to the gutters. The proper erection of snow-fences or the planting of hedges will often intercept drifting snow before it blocks the gutters. Effort should be made to permanently correct the effects that are constantly an inconvenience and an expense to the public.

Class A Storms—Heavy Rains

Heavy rain-storms require the picking up of the wash from steep streets which have a soft top or inadequate gutters. The material that is washed down these hills often settles at the bottom and blocks up catch-basins, leaving deep ruts which are a menace to all types of vehicles. The basins should be cleaned at once and other deposits removed. If the deposit contains sufficient coarse aggregate, it can be used again to fill the ruts. In most cases, however, it is far too fine for any other purpose except as a covering or binder over new coarse material. A place should be provided to use this sand, unless it is too dirty, rather than haul it away to the dump.

As a rule, the same streets wash after each heavy rain, so a list of them should be prepared, showing the number of men, teams, and disposal places which are required to take care of each deposit. Some attempt should be made to permanently correct this washing by laying hard surfaces or gutters.

A list of all low places which are apt to flood should be prepared, including a summary of such pumps, tools, men, and vehicles as will be required to handle the situation. Cement bags two-thirds full of sand are very useful in making temporary dams to keep water out of cellars. The best possible prevention of a flood is a clean catch-basin and unobstructed inlets, culverts, and drains.

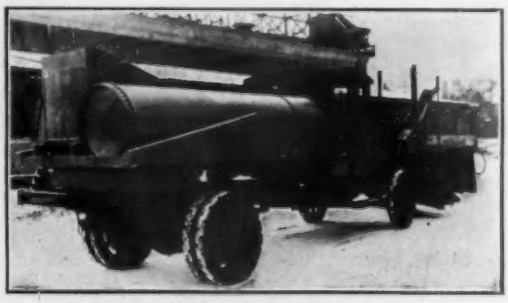
Class B—Slush-Storms

Slush-storms require but little attention unless there is a chance of the temperature's falling. As long as it remains warm, the slush will disappear quickly and little work is necessary, except on the main mercantile streets where large numbers of pedestrians cross, and there it is necessary to establish frequent and wide crosswalks. A narrow crosswalk is useless, as vehicular traffic soon works the slush or snow into it again. Crosswalks should be swept at least 12 feet wide. Two-horse road machines or light tractor scrapers are convenient for opening up and maintaining the crosswalks, but because of standing vehicles it is usually necessary to employ at least one man for every two wide crosswalks on a busy street. With the aid of shovel, hoe and push broom, a man can do very effective work in caring for the slush and such water as accumulates. This man must keep the gutter free so that the water will have an open course

in which to drain off, or else the crosswalks will become miniature lakes instead of safe, reasonably dry passageways.

On busy streets, it is desirable during the night or in the early morning, before traffic becomes heavy, to open the gutters with scrapers. Men enough should be assigned to this task so that it may be done speedily before the gutters are blocked by standing vehicles. Open gutters conduct melting slush quckly to the sewers. Passing vehicles are a great help in melting this slush by continually agitating it.

If it is expected that the weather will turn colder, it is advisable to open up all gutters in flat places and around the corners to the nearest catch-basins, so that as much of the melting snow may be disposed of as possible before freezing commences. Blade scrapers and gutter plows are most effective for opening gutters after slush-storms. If gutters are scraped out before property owners have had a chance to shovel off their walks, the effort is wasted, as they will be filled in again. In general, it is better to defer the scraping out of gutters on all but main streets until one day after the storm. This gives the people an evening after the day's work in which to shovel their walks, and saves an extra trip for the scrapers.



FOX ROTARY SNOW-BROOM PARTICULARLY SUCCESSFUL WITH LIGHT, DRY SNOWS

Class C—Slippery Streets and Walks

The sanding of slippery streets and walks should be done in a systematic manner. A careful survey will determine what streets with steep grades should be sanded, and the crossings most used by pedestrians. The streets where traffic converges until it becomes heavy, together with those having steep grades, should be sanded first. After this, the streets leading into the center and those leading to depots, schools, hospitals, and similar institutions should be handled.

Sand for this purpose should be coarse, and free from stones and pebbles which might roll under foot. Wet sand freezes into lumps and is next to useless. It should be hauled in the hot, dry summertime, when it may be as dry as possible. Closed-in storage sheds provided with adequate steam heat radiation, and well-drained, will insure the sand's being in a workable condition when needed.

The district to be sanded should be divided into as many routes as the number of available foremen will allow. One or two foremen should be assigned to each route. If there are two foremen, one should be in charge and remain at the sending end, while the other inspects the distribution. These men may alternate on successive days. It is a mistake to send the foreman in charge out on the job, unless he has only one team, as it is impossible for him to cover the activities of two teams on different streets at the same time. It is no unusual thing for a foreman to have half a dozen or more teams out sanding at the same time. If he should miss a team which has covered its assigned streets, the team will load again and start off with no definite place to go to, and wander about until it strikes a place not already sanded, causing confusion and waste of time. The place for the foreman is at the sand-loading shed, checking his teams from his list and systematically directing them over the whole route.

The inspector or other foreman should patrol routes, using a duplicate list. As he cannot be with every team at the same time he should plan to catch them at intervals. The mere knowledge that he is liable to appear at any moment will have a tendency to keep the men on the job. While he does not assign the teams to streets, he can see that the sand is being properly applied, and in the case of any mix-up he can telephone to the foreman in charge for instructions. Teams should not be loaded too heavily, as the slippery condition of the roads will not permit it. Each team should be accompanied by two spreaders on any ordinary width of walk. It is a waste of labor to assign more than two spreaders to a team, except when sanding road surfaces or very wide walks where two men may walk abreast on each walk. The more men employed the quicker the work will be accomplished, but not so many should be used that some will have to walk over a portion already sanded in order to spread sand on needed spots. Either the driver or an extra man should remain on the wagon and load pails for those spreading. The spreaders should be provided with pails with a strap or

small rope with which to support the heavy pail over their shoulders. Small wooden paddles are convenient to spread the sand out of the pails. Unless such a thing is provided, the men's hands will soon become very sore. The spreaders should ride back and forth on the team and should help load it at the shed, or else they are apt to become lost. Where a long street is to be sanded, the spreaders may be instructed to remain there, and more than one team may be assigned to them. It must be remembered that sand is heavy and a man soon becomes tired on this particular kind of work.

Class D—Light Snow

This type of storm requires but little work outside of the main business district. If it is the policy to clean the business streets completely, work should be started as soon as an inch of snow falls, provided that indications are that the snowfall is to continue. The most effective time in which to clean these streets is at night after normal vehicular traffic has left them. This allows a clear stretch ahead and greatly facilitates the speed with which the cleaning can be done.

For light snow, machine brooms can be used. For heavier snow, scrapers or plows are better. The snow should be worked back as close to the curb as possible, so that room may be left for succeeding scraping, which may be necessary if the storm continues. Four brooms or road machines staggered will in one sweep push back a light accumulation of snow to the curbing on one-half the width of any ordinarily wide street. If there are car tracks, there will be less width to push back, as the trolley plow will have cleared the tracks. Therefore, less brooms and scrapers will be required. The advantage of this method is that, once the snow is started from the center of the street toward the curb, it is not allowed to freeze in or be spread about by traffic, but is kept moving until it is finally deposited. Another advantage of working the brooms or machines together is that mutual assistance can be given in case of breakdowns, and then there is a certain cheering effect upon the morale of the cold, tired workers. Furthermore, the foreman can better direct the men when working together than when scattered about engaged in slow, aimless, individual endeavor.

In the morning, or as soon as possible, a floating gang should be sent out ahead of the regular digging gang to do nothing but open up intersections sufficiently to allow vehicles to turn in and out of the side streets and to expose fire-plugs ready for service. Other gangs should be sent out to clear all city walks. In cleaning walks, the first thing to do is to shovel or plow off one width the whole length of the walk. This provides a space in which people can walk and keeps them from treading down the whole surface. After this strip is removed, the rest can be shoveled with a minimum of effort. Another saving in labor can be accomplished by taking along some sand and spreading a little of it along instead of bothering to scrape off the very last bit of the snow. If the rest of the snow is to be removed, digging gangs should follow and haul off the snow. Mechanical loaders are a great saving in removing the ridge, but, like all machines, they work better in some places than in others.

It is quite essential that all walks on city property should be promptly cleaned as an example to all citizens. It is at least inconsistent to require the taxpayers to clear their walks unless the city does its part.

(To be continued in the November issue)

Kansas City Garbage Contract Confirmed

WITH the confirmation by the Common Council on July 6, of the ten-year garbage contract between the city and Paul Patton, Kansas City's garbage situation seems to be on the road to improvement, according to the *Kansas Citian*, published by the Chamber of Commerce.

Under the new contract, garbage service is estimated to cost $253,000 for 1026, increasing with the growth of population each year. This is on the basis of probable tonnage. Under the previous contract blocked by the Chamber of Commerce, the city would have spent $350,000 the first year, which amount would also have increased with population growth. In addition to this under the former contract the city would have invested $250,000 in a plant which could be used only by the company holding the patent on the process for which it was designed. This contract did not provide for protecting the city through penalty for failure to collect and in other ways, as does the new contract.

The estimate of cost under the new contract made by Samuel A. Greeley, Chicago, Ill., consulting engineer for the Hospital and Health Board, is based on the probable tonnage to be collected, estimated at 33,906 tons for 1926. Compensation is at the rate of $7.45 for each ton of garbage collected and disposed, the garbage to be weighed by city collectors.

Under the terms of this contract it is within the power of the Hospital and Health Board to give Kansas City as high a grade of garbage collection service as it desires. In preparing the proposals, receiving bids and drafting the final contract, the Board had the assistance of Mr. Greeley. The contract calls for three collections a week from June 15 to September 15 and two collections a week for the remainder of the year. It provides for the use of water-tight metal bodies on trucks or wagons covered over by heavy canvas.

What Meterization Has Done for the Evansville Water-Works

By Charles Streithof

General Superintendent of Water-Works, Evansville, Ind.

THE original plant of the Evansville, Ind., water-works was put into operation in 1873. The present pumping-station, which is serving a population of 100,000, was put into operation in 1892, and the filtration plant started on May 20, 1912. The plant is situated on the Ohio River about a mile and a half from the business center.

The pumping machinery consists of two Holly vertical, triple-expansion, differential-plunger pumps, each with a capacity of 12,000,000 gallons per day against a head of 125 pounds per square inch; two De Laval steam turbine-driven, double-stage centrifugal pumps with a capacity of 15,000,000 gallons per day against a head of 140 feet; two De Laval steam turbine-driven, single-stage centrifugal pumps with a capacity of 15,000,000 gallons per day against a head of 63 feet, these pumps being used to lift water from the river to the filter plant. The boiler plant consists of four water-tube Class-A Special water-tube No. 18 and No. 21 Stirling boilers, three of 260 horse-power each, and one of 380 horse-power.

The filtration plant is of the rapid sand type. The original plant had a capacity of 12,000,000 daily, which was increased in 1924 to 18,000,000 gallons daily. The entire plant, designed by Alvord, Burdick & Howson and built under their supervision, is equipped with all modern devices for producing a first-class water.

The distribution system is supplied from the main pumping-station through three 30-inch force mains. There are 161 miles of pipe varying in size from 4 to 30 inches, with 1,204 fire-hydrants, 81 automatic sprinkler services, and 18,560 service connections.

Metering

Prior to 1914 there were 30 large water-meters in service. It was found impracticable to use water-meters before the Ohio River water was filtered. After the filtration plant was completed, the water-works managers were of the opinion that because of the clear and pure water that was then provided the waste of water would be curtailed and the daily pumpage reduced. This prediction failed to materialize, as the consumers on the flat-rate basis wasted just as much water as they formerly did with the unfiltered water.

SUMMARY OF METER STATISTICS

EVANSVILLE, IND.

1910 to Dec. 31, 1924

1 Year	2 Total Consumers end of year	3 Ave. daily Pumpage (Gals.)	4 Total Meters end of year	5 Per Cent metered end of year	6 Meters installed each year	7 Cost of Meter installations each year	8 Labor cost of settings each year	9 Cost of meter service each year
1910	7,620	8,703,462	36			$ 2,050.47		
1911	7,800	9,779,917	45		9	1,967.60		
1912	7,987	9,863,480	50		5	1,291.89		
1913	8,176	9,797,800	50		10	1,532.42		
1914	8,875	9,314,700	271	3.1	221	9,792.22	$ 4,959.43	$ 1,046.67
1915	10,680	7,813,100	2,181	20.4	1,910	20,848.32	2,114.10	1,992.43
1916	10,818	8,019,632	4,048	37.4	1,867	16,646.85	1,026.12	3,559.89
1917	12,461	8,752,930	5,403	43.4	1,315	12,913.23	920.25	4,066.41
1918	13,434	8,994,401	6,098	45.3	1,338	7,229.40	649.70	4,142.04
1919	13,987	8,121,746	6,867	49.2	758	9,983.69	824.61	4,375.52
1920	14,283	8,071,198	7,683	53.8	833	10,680.33	966.55	4,700.87
1921	15,199	8,119,610	8,627	56.8	967	16,491.03	1,169.05	5,431.26
1922	16,400	8,363,702	11,465	69.9	2,928	49,110.07	4,555.55	6,346.36
1923	17,322	8,298,902	16,052	92.6	4,458	59,934.98	4,363.55	7,706.22
Dec. 31, 1924	18,412	7,190,461	18,412	100.0	2,385	31,829.89	3,263.00	7,309.40

Column No. 5 is figured from No. 4 and No. 2.
Column No. 7 includes entire cost of new construction.
Column No. 8 includes labor cost of new construction.
Column No. 9 includes maintenance, removing and resetting, reading, and meter and fittings department labor and expenses.

Total cost of meter construction to Jan. 1, 1925—$249,217.81.

SIZE AND NUMBER OF METERS INSTALLED EACH YEAR
Evansville, Ind.

Year	Number of Meters Installed Each Year								Total Number each year	Labor Cost each year	Total Cost each year
	⅝"	¾"	1"	1½"	2"	3"	4"	6"			
1910											$ 2,238.80
1911									9		1,947.40
1912				1		3			5		1,291.80
1913									10		1,532.42
1914	21	40	63	43	45	5	1		221	$4,960.43	9,792.22
1915	1,473	436	117	56	71	11	24	3	2,181	2,114.10	20,848.32
1916	1,738	31	37	6	5		5	1	1,822	1,926.12	16,646.85
1917	1,254	22	15	6	6		10	2	1,315	920.25	12,913.23
1918	1,337	13	18	4	14	4		2	1,392	649.70	7,229.40
1919	704	22	16	1	10		5		758	934.61	9,983.69
1920	775	30	16	2	9		1		833	966.55	10,690.30
1921	922	26	12	1	2		2		967	1,168.06	14,491.08
1922	2,879	12	17	2	12		3	1	2,926	4,566.56	49,110.07
1923	4,258	18	29	18	27	4	3	1	4,458	4,363.55	59,934.96
Dec. 31, 1924	2,346	1	24	1	12		2		2,386	3,263.00	28,566.89
	17,707	650	384	141	218	27	57	10	19,234		$249,217.81

Present cost of Tile Settings to city—$ 4.80 each.
Present cost of Pit Settings to city—$35.00 each.
Pit Settings are used for sizes over 1" and are built completely by city.
Tile Settings—material furnished by city and meter set in place after consumer makes all connections.
Average investment per Meter all sizes $12.96.

COST OF METER SERVICE

Year	Maintenance	Removing and Resetting	Reading	Meter Fitting Dept.		Total of Preceding Items
				Labor	Supplies and Expense	
1914	$ 435.02	$ 22.83	$ 253.35	$ 325.95	$ 9.52	$ 1,046.67
1915	761.88	123.95	746.95	165.80	193.85	1,992.43
1916	1,388.42	295.75	1,034.58	678.19	162.95	3,559.89
1917	1,628.01	859.50	1,417.15	544.94	116.81	4,066.41
1918	1,620.63	520.10	1,352.70	563.04	85.57	4,142.04
1919	1,824.78	431.35	1,444.60	656.13	18.66	4,375.52
1920	1,682.72	327.70	1,869.55	807.60	13.90	4,700.87
1921	2,272.51	288.20	2,016.00	832.80	22.55	5,431.26
1922	2,246.28	366.10	2,521.47	813.30	105.21	6,346.36
1923	2,846.54	120.00	2,872.00	1,850.00	17.68	7,706.22
1924	2,966.35	24.00	5,124.00	2,384.00	24.14	10,522.49

Meter and Fittings Department covers Stock Room expense.
Office labor not included in above items. Meter record Clerk receives $1,500.00 per year

It was soon found that the new filtration plant was entirely too small to meet the growing demand. In 1914, the Water-Works Board purchased a sufficient number of meters to take care of the large consumers. After these had been installed, marked reduction in the pumpage was noted at night. In 1915, 2,200 meters were installed in the southeast residential section, and from then until the end of 1924, meters were installed at the rate of 2,000 per year, thus completing the meterization of the entire distribution system.

It may be of interest to know that the Water Department collected on the flat rate in the above-named districts an average of $13.16 per consumer. After the meters had been in service for one year, only $6.62 was collected per customer. A slight raise in the meter-rates was ordered in 1917, this rate prevailing until April, 1923, when the Public Service Commission again granted a small increase. The present rates are 25 cents per 1,000 gallons for the first 5,000 gallons used monthly, 20 cents per 1,000 gallons for the next 20,000 gallons used monthly after the first 5,000 gallons, 15 cents per 1,000 gallons for the next 75,000 gallons used monthly after the first 25,000 gallons, 10 cents per 1,000 gallons for the next 200,000 gallons used monthly after the first 100,000 gallons, and 8 cents per 1,000 gallons in addition to the first 300,000 gallons used monthly. An annual charge for service only, not including water used, has been figured on the following basis:

⅝-inch meter	$3.00
¾-inch meter	4.00
1-inch meter	5.00
1½-inch meter	6.00
2-inch meter	8.00
3-inch meter	15.00
4-inch meter	24.00
6-inch meter	40.00

Prior to 1914, the average daily pumpage with 7,160 water consumers was 9,797,800 gallons. In 1924, the average daily pumpage with 18,412 consumers all metered was 7,190,461 gallons. The records of the Water Department for 1924 show that the peak load of pumpage during the day time reaches as much as 18,000,000 gallons and the average night load between 9 P. M. and 6 A. M. is 1,378,600 gallons in 9 hours. Prior to the installation of the meters the night load was almost equal to the day load.

The total cost of installing the meter system up to January 1, 1925, was $249,217.81, and it proved a good investment for the Department as well as the consumer.

Entire City Benefited

How the entire city has benefited by curtailing the waste of water can readily be seen. In 1911, the National Board of Fire Underwriters made a general inspection of the city and reported the water-works system in Class 5. In 1919, a second inspection was made and credit was given for the work of meter installation, and the Department was placed in Class 3. A third inspection was made in 1923 and the water-works system was advanced to Class 1. In October, 1924, the entire city received the benefit of a reduction of insurance ranging from 6½ to 15 per cent. The Evansville waterworks is the only water plant in the Middle West, according to the records of the National Board of Fire Underwriters, that enjoys the rating of Class 1. Furthermore, had the Department not commenced to install meters when it did, it would have been compelled to increase the capacity of the filter plant almost as soon as the plant was completed, or be compelled to mix raw river water with filtered water part of the day.

Accounting for Water Pumped

Water is pumped by the low-lift pumps through a 30-inch low-pressure Venturi meter. The high pumps take the water from the clear-water reservoir and discharge through a 30-inch high-pressure Venturi meter. Both of these meters were made by the Builders Iron Foundry. The following table gives a statement of the total gallons pumped in 1924 and shows how it was accounted for:

Total Gallons Pumped in 1924—2,631,708,820		
Water passed through meters	1,703,032,000	64.7
Estimated water (meters out of service)	30,000,000	1.1
Consumed at filter plant	109,731,521	4.2
Flushing streets and wharf levy	109,500,000	4.2
Water-troughs	18,250,000	.7
Fire loads	32,000,000	1.2
Parks, swimming pools, engine-houses and city buildings	20,000,000	.7
Unaccounted, underground leakage, etc.	609,195,299	23.2
	2,631,708,820	100.0

PER CAPITA CONSUMPTION

	Gallons		
1910	124	No filtered water	No meters
1915	107	Filtered water	2,181 meters
1920	94	Filtered water	7,703 meters
1924	74	Filtered water	18,412 meters

The total number of meters that have been placed in service is 19,234. Of this number, 18,412 were in service January 1, 1925, 3 were stolen, 4 were lost from trucks, 288 were frozen (most of them in the winter of 1917-1918 and were set in basements), and 527 were worn out and discarded.

Economy in Plant Operation

We are not satisfied by saving on water alone, but have also started to save the coal pile. Since the new addition to the filter plant has been in operation, no trouble has been experiencd in keeping the clear-water reservoir full. On the night of January 1, 1925, we arranged to have the reservoir full to the top. At 11 P. M. the low-service turbines and the filters were shut down and one boiler banked. This has been done every night. The shut-down varies every night from 6 hours to 6 hours and 45 minutes. This effected an average saving of 6.9 tons per day during January and a saving of 5.8 tons daily during February.

No labor has yet been saved. It is our intention, however, to shut down 8 hours each night; a saving then of $7.98 per day can be effected on labor.

We have just equipped both of our Holly triple-expansion pumps with Birch non-slip valves. A test run on March 9 showed a difference between the Venturi meter and the pump counter of 2.3 per cent, and between the Venturi meter and the clear-water reservoir a difference of 1.7 per cent.

ACKNOWLEDGMENT.—A paper presented before the Seventeenth Annual Meeting of the Illinois Section of the American Water Works Association.

Typhoid Outbreak Due to Cross-Connections

AN outbreak of typhoid fever occurred at Winona Lake, Ind., during the latter part of June and the early part of July, which, according to the *Public Health Reports* issued weekly by the United States Public Health Service, is now believed to have been caused by cross-connections which permitted polluted water to enter the mains carrying the public water-supply.

The number of cases of typhoid resulting is not known, as many cases occurred among persons from other states who attended a conference held at Winona Lake from June 4 to 12. Reports received by Dr. William F. King, State Commissioner of Health of Indiana, show that cases occurred among persons in attendance at the conference from eight states other than Indiana. On July 2 there were reported at least eleven cases of typhoid fever in Winona Lake and community and several additional doubtful cases.

From the data available, it seems very probable that the infection was carried into the public water-supply of Winona Lake through two cross-connections between the public water-supply system and a system used for pumping surface water from a canal for use in sprinkling lawns and flushing toilets at the comfort stations on the parkway where the conference was held. Information obtained from residents in a house-to-house canvass in the area surrounding these cross-connections revealed that in practically each instance the water used from the city mains during the time when the conference was in session was bad in taste. It was also learned that there were many cases of severe gastro-intestinal attacks as well as cases of typhoid fever either in the homes or among persons visiting them. Canvasses made in other sections of the city showed, on the contrary, that few persons noticed any change in the taste of the water and that there were few cases of gastro-intestinal trouble and no cases of typhoid except among persons who had drunk water from faucets in the area near the cross-connections.

The taps nearest the cross-connections were a row of drinking-water faucets which had been installed for the use of the public while the conference was in session. This probably accounts for the greater prevalence of typhoid fever among the visitors than among the residents. A barber shop in the vicinity of the cross-connections was visited by the investigator, and the barber stated that the water obtained from the city mains during the time of the conference was unfit for use and that it had an odor similar to that of the canal water.

Investigations revealed that there were two cross-connections between the canal water system and the public supply system. There was no evidence that the valves had been tampered with, but there was evidence that a closed valve in the canal system was leaking. Tests made on July 1, before the cross-connections were broken, of the water obtained from a tap in one of the houses in the suspected area showed that it was highly contaminated. Tests made July 12 and July 21 after the connections had been broken and the water

chlorinated showed the water to be satisfactory bacteriologically.

Additional evidence that the canal water had been entering the city mains is presented by the fact that a large meter recording the flow of water in the area involved was shown to have been turning backwards.

In order to remove the danger from the above-mentioned cross-connections and any others possibly existing, the pump on the canal bank was dismantled and removed. The canal water is said to be unfit even for sprinkling purposes, since contamination might be spread by such use.

It appears that these cross-connections have been installed in spite of an order made by the State Board of Health of Indiana more than two years ago that all physical connections between public water-supplies and other supplies obtained from surface sources should be discontinued, and making it unlawful for any such physical connections as those at Winona Lake.

Many states now have laws and regulations regarding cross-connections. Some require double check-valves where there is a connection between industrial supplies and the public supply mains. In view of the fact that many outbreaks of typhoid fever and gastro-intestinal disturbances have resulted from such connections between the potable supplies and polluted sources, and since check-valves cannot always be depended upon, it is of interest to include a resolution passed at the American Water Works Association Convention in Louisville this year concerning this subject:

Whereas, cross-connections between potable public water-supplies and supplies from other sources have been the cause of a large number of outbreaks of typhoid fever and other water-borne diseases; and

Whereas, check-valves and other similar protective devices cannot always be depended upon; be it

Resolved, that no physical connection should be permitted between a potable public water-supply and any other supply except as follows:

1. With another potable public supply;
2. With a potable supply which is regularly examined as to its quality by those in charge of the potable public supply to which the connection is made;

This prohibition to apply to all piping systems either inside or outside of any building or buildings; and be it further

Resolved, that definite programs should be inaugurated in each municipality to permanently eliminate all other connections.

Items of Interest

Plans for 1926 Road Show

CIVIC organizations as well as individuals interested in highway activities are urging state and county highway engineers and commissioners, as well as municipal officials, to attend the National Convention and Road Show of the American Road Builders' Association, which will be held in Chicago, January 11-15, inclusive, in order that they may take advantage of the latest improvements in road construction and maintenance machinery and equipment and apply these latest developments to their local problems. In this way each community and state may be able to take advantage of the economic development of road construction and maintenance. In recent years highway expenditures have amounted to approximately one billion dollars per year. This amount, in addition to the money spent in allied highway interests, means that the highway industry has become the greatest industry of the nation. How completely this industry affects the lives of all people will be brought out during Good Roads Week, beginning January 11, 1926, which will be nationally observed throughout the country.

Valuable Data in the 1926 Municipal Index

THE sections of the 1926 Municipal Index devoted to streets and highways, garbage, ash and refuse collection and disposal, and water-supply and purification are being developed through the tabulation of statistics now being secured from municipal officials throughout the United States. The water-supply material will cover cities not reported in the 1925 Municipal Index nor in the statistics published in THE AMERICAN CITY in the issues from February through July, 1925.

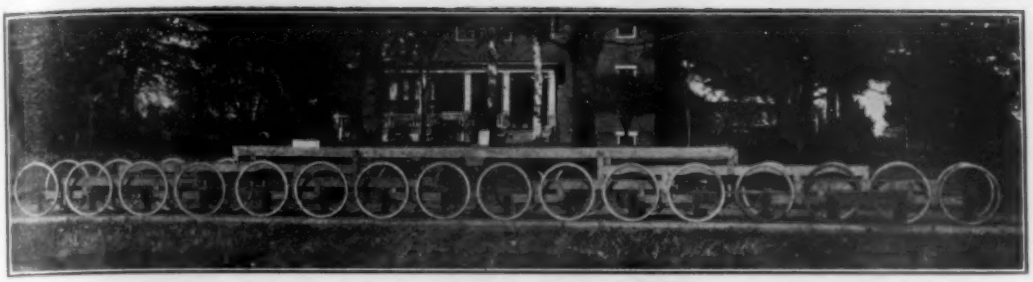
Advertising for Professional Engineering Services

The Board of Direction of the American Society of Civil Engineers at its meeting held in Salt Lake City on July 6, 1925, adopted the following resolution:

"WHEREAS, the Board of Direction of the American Society of Civil Engineers has had brought to its attention the fact that, on occasions, public authorities ask engineers through advertisements to submit in competition their terms for preparing plans for engineering projects, frequently requesting that such tenders be accompanied by an estimate of the cost of the proposed project, and

"WHEREAS, such procedure is not in the public interest, it being contrary to recognized practice in engaging professional services, thereby asking of engineers a form of competition inconsistent with professional ethics, and consequently tending to eliminate the services of qualified engineers of high professional character, therefore be it

"RESOLVED, That the Board of Direction of the American Society of Civil Engineers emphatically records its disapproval of such procedure, and recommends that public authorities and others desiring to secure professional engineering services select an engineer, from those available, on the basis of his qualifications, experience and professional reputation for work of the size and character under consideration, determining by inquiry of recognized professional authority the appropriate basis of compensation for such services."



THE 32-WHEEL PROFILOMETER

Investigations of Smoothness of Pavements

By H. F. Clemmer and D. D. McGuire

Engineer of Materials and Assistant Engineer of Materials, Respectively, Division of Highways, Springfield, Ill.

SMOOTHNESS of travel over pavements is without question a refinement of construction important to the traveler in so far as comfort is concerned, and to the engineer in so far as it constitutes a factor in reducing any possible effect from impact and in securing what might approach the "perfect" job. The Illinois State Highway Division has conducted a number of investigations during the past year by the use of a machine known as the "profilometer." This machine was mounted on sixteen wheels, with a recording device located at the center. By means of a fiber wheel in contact with the pavement, a vertical rod actuates a strainograph which records the surface irregularities.

Though this apparatus has proved satisfactory for general use, it was desired to investigate the surface irregularities as felt through a car of long wheel-base. To obtain this record a machine was constructed on thirty-two wheels identical in every respect with the first machine except in its length. This instrument has been operated over approximately 75 miles of pavement, the investigation covering observations on 500 separate sections.

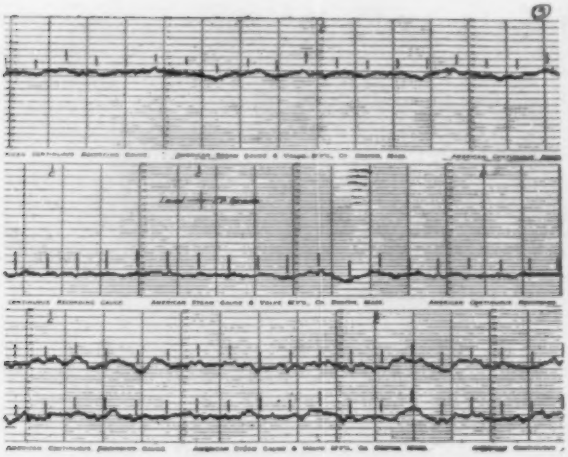
Observations and profiles were made to include all the variable conditions of pavement construction in Illinois and comprised data on the work of 78 contractors. The equipment used in the construction by these contractors included five different makes of finishing machines, and on a portion of the work hand-finishing methods were employed.

In making a study of the various degrees of smoothness or roughness of pavement surfaces, the work has been conducted with particular reference to the irregularities which might affect the riding qualities of the pavement. In this study the following factors have been found to have an influence on the degree of smoothness:

1. The condition of the subgrade upon which the forms rest
2. The condition of the forms
3. The care used in setting the forms
4. The condition of the finishing machine
5. The operation of the finishing machine

THE EFFECT OF THE BUSH HAMMERING METHOD OF REMOVING HIGH SPOTS ON CONCRETE PAVEMENT

Points on the profilometer record indicated by the letters B.H. represent areas of the pavement surface which have been lowered by the bush hammering method



PROFILE TAKEN ALONG TWO SEPARATE SECTIONS BUILT IN 1924 BY SAME CONTRACTOR, USING DIFFERENT MAKES OF FINISHING MACHINES

The lower chart shows two profiles made at parallel locations on each half of a pavement slab on which the construction form joints were directly opposite

6. The consistency of the concrete
7. The percentage of grade
8. The degree of curvature

The mechanical condition of the finishing machine and also the manner in which it is operated are necessarily important in obtaining the smooth surface, as results have shown.

One factor having a highly important effect on the ease with which a pavement may be finished successfully is consistency of the concrete. The placing of an extremely wet batch next to an extremely dry batch of concrete is certain to cause difficulty in the operation of finishing equipment, with the result of increasing the possibility of high spots.

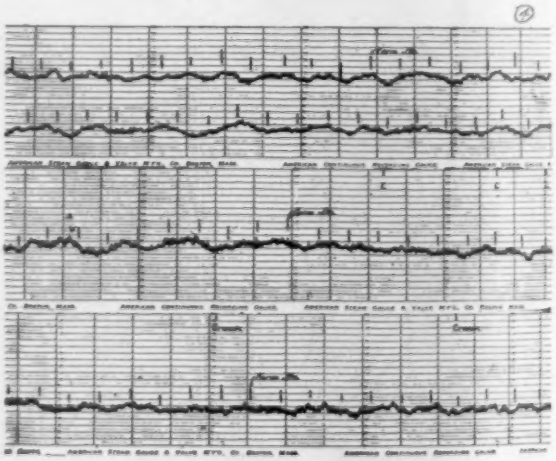
On curves and grades where concrete has a tendency to flow, finishing becomes difficult, and as a result greater care is necessary to prevent irregularities. Observations taken on pavement on curves and grades show "high spots" in far greater number than anywhere else.

The Illinois highway specifications for finished concrete pavement allow no irregularities greater than ¼-inch from a 10-foot straight edge. All high spots in excess of this limit must be eliminated by the contractor with the use of a carborundum brick and water. If, however, the roughness cannot be reduced to specification limits by the foregoing methods without exposing the coarse aggregate, the Highway Department proposes to penalize the contractor for each high spot the cost of one square yard of pavement at the unit price as contracted, exclusive of the cost of cement.

Up to the first of this year, high spots in excess of the specification limits (¼-inch in 10 feet) were reduced by the bush hammering. This method, however, has not proved satisfactory and will not be permitted in the future.

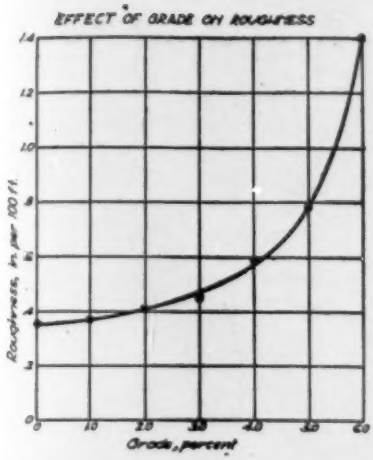
The second illustration shows the effect of the bush-hammering method of removing high spots. The profiles shown are those taken on the surfaces of three sections built by three different contractors. Points on the profilometer record indicated by the letters B. H. represent areas of the pavement surface which have been lowered by the bush-hammering method.

The third and fourth illustrations show profiles taken on two separate sections of pavement built in 1924 by the same contractor, using a different make of finishing machine on each section. Comparison of the two profiles shows little difference in the surfaces. The lowest chart in the third illustration shows two profiles made at parallel locations on each half of a pavement slab on which the construction form joints were directly opposite. The top chart in the fourth illustration shows two profiles taken in the same manner on a pavement slab on which the form joints were staggered. In both cases the joints were at 10-foot intervals. From the profiles it would seem that the placing of the joints in the forms has little effect on the



PROFILES TAKEN ON TWO SEPARATE SECTIONS OF PAVEMENT BUILT IN 1924 BY THE SAME CONTRACTOR, USING A DIFFERENT MAKE OF FINISHING MACHINE ON EACH SECTION

The upper chart shows two profiles taken in the same manner on a pavement slab on which the form joints were staggered at 10-foot intervals



THE EFFECT OF GRADES OF DIFFERENT PERCENTAGES ON THE ROUGHNESS OF THE CONCRETE PAVEMENT SURFACE

finishing of the surface. Comparison of the diagrams also shows no great difference in the results obtained by the use of the two makes of finishing machines.

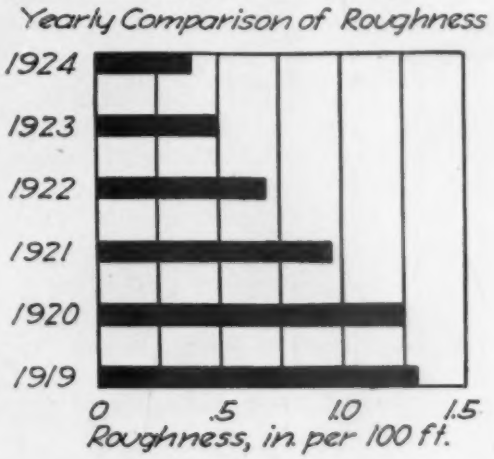
The fifth illustration shows the effect of grades of percentages varying from 0 to 6 per cent on the roughness of pavement surface. The roughness indicated in this chart is a summation of all irregularities over ¼-inch in 10 feet, and is an index of the riding quality of a pavement. The values used in the compilation of these data are those obtained on pavements constructed in Illinois in 1923 and 1924 and are given in inches per 100 feet.

The last illustration compares the surface roughness of pavements constructed in Illinois during each of six years, beginning with 1919. The total roughness in this chart was obtained in the same manner as the value for roughness in the preceding chart. This comparison shows the progress made in Illinois in securing smooth pavement during the past six years.

A study of these investigations indicates that it is possible to secure a smooth pavement surface free from "high spots" by rigid inspection and strict enforcement of specifications.

The observations made, studying the surface smoothness obtained by various finishing machines, indicate conclusively that any of the generally used machines in proper condition and in the control of competent operators can produce equally satisfactory results.

ACKNOWLEDGMENT.—From a paper read before the American Road Builders' Association, 1925.



COMPARISON OF SURFACE ROUGHNESS OF PAVEMENTS CONSTRUCTED IN ILLINOIS FROM 1919 THROUGH 1924

The Cost of Refuse Collection and Disposal in Boston

THE Public Works Department, Boston, Mass., has issued a statement giving the mean 1923 population of the various sections of Boston, together with the population per acre, the total weight of refuse and the cost per capita for the year 1923, as follows: South Boston, population 72,283, or 94 per acre, refuse weighs 940 pounds per capita and costs $1.55 per capita for disposal; East Boston, population 65,386, or 42 per acre, refuse weighs 881 pounds per capita and costs 68 cents per capita for disposal; Charlestown, total population 35,541, or 42 per acre, refuse weighs 1,224 pounds per capita and costs $1.97 per capita for disposal; Brighton, total population 43,661, or 16 per acre, total refuse 1,430 pounds per capita, costs $1.73 per capita for disposal; West Roxbury, total population 33,629, or 5 per acre, refuse weighs 1,389 pounds per capita and costs 92 cents per capita for disposal; Hyde Park, population 19,241, or 7 per acre, refuse weighs 907 pounds per capita and costs 71 cents per capita for disposal; Dorchester, population 160,584, or 30 per acre, refuse weighs 1,129 pounds per capita and costs $1.30 per capita for disposal; Roxbury, total population 154,522, or 43 per acre, refuse weighs 1,529 pounds and costs $2.41 per capita for disposal; South End and Back Bay, total population 116,794, or 57 per acre, refuse weighs 1,763 pounds per capita and costs $3 per capita for disposal; North and West Ends, total population 74,126, or 110 per acre, refuse weighs 1,682 pounds per capita and costs $2.17 per capita for disposal. These figures are of interest for comparison.

Report on Snow Removal

THE Committee on Maintenance, of the Highway Research Board, W. H. Root, Iowa Highway Commission, Chairman of Committee, reports that one of the most important maintenance problems for roads to-day is snow removal, but that more attention is required on the side of economy. Figures collected indicate that plows should be pushed rather than pulled, that ordinary push plows do not perform satisfactorily where the snow is over 24 inches deep, and that improved V-type plows and rotary plows are to be had and should be used where heavier snowfalls are to be expected. A great deal of work can be saved by the erection of snow-fences.

Diesel-Engine-operated Municipal Water-Works---Part II

Special Features of Diesels Applicable to Water-Works Problems

In steam-engine practice when a larger brake horse-power is wanted, the engine cylinder bore and stroke are increased. Larger cylinders result in better economy. That is true only to a limited extent in the case of diesel engine design. Usually, engines are constructed having cylinders capable of 37½, 50, 75, 100 and in rare cases as large as 200 brake horse-power per cylinder. Considering a 50-horse-power unit as typical, when a 100-horse-power unit is constructed two cylinders are provided.

Figure 3 shows a 6-cylinder, 300-horse-power, solid-injection type, 2-cycle, fuel oil Fairbanks-Morse engine, directly connected to an electrical generator.

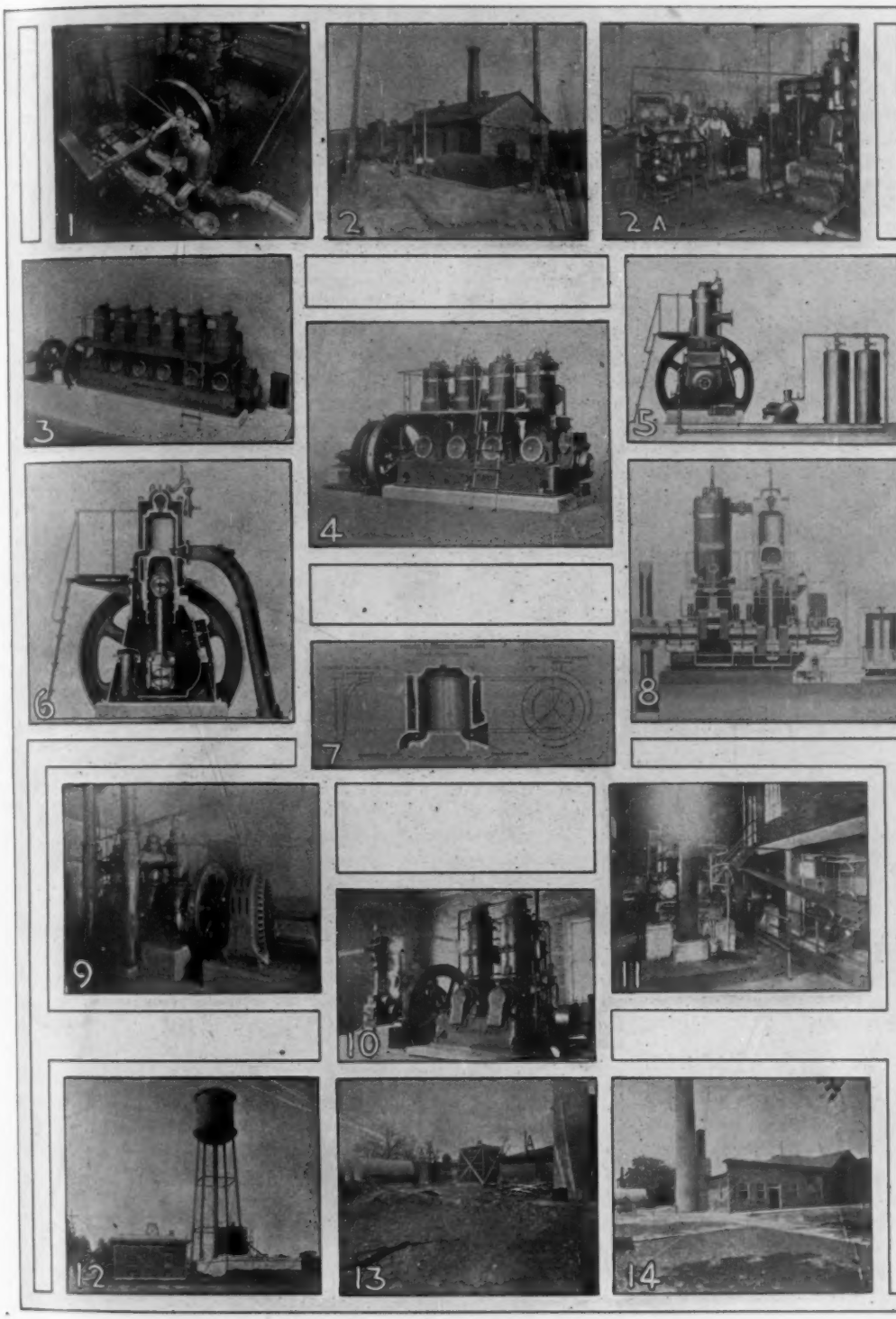
Figure 4 shows a 200-horse-power, 4-cylinder engine of the same type. The cylinder size and, in fact, the actual cylinder construction are identical to those used in the 300-horse-power engine. The parts are interchangeable. These engines are adjusted to a speed of 257 r.p.m., because that happens to be a convenient generator speed. Such engines have a compression of 500 pounds above the pistons and are capable of starting from cold without the use of torches or hot spots. Air pressure is introduced above the piston and starts the engine turning, much the same as steam operates a steam engine.

Figure 5 shows the auxiliary air-starting equipment, consisting of a compressor driven by a gasoline engine discharging into air-tanks which are kept pumped up to from 250 to 300 pounds pressure. When starting the engine, the operator simply opens the valve in the air line, takes hold of the two hand levers, one controlling the fuel and the other controlling the air, and the first turnover on the crank ignites the charge of oil. The cycle is completed in one revolution of the crank or two strokes of the piston. Hence, the engine is designated as being of a two-stroke cycle or simply 2-cycle type.

Figure 6 is a transverse section through the engine which makes it possible to examine its operation and construction. No valves are used in this engine, ports being provided in the cylinder wall for both the air intake and the spent-gas exhaust. Fuel is injected into the top of the combustion chamber just as the piston reaches the top of the stroke. The timing of the injection and the amount of fuel injected are accurately regulated by the fuel injection and governing device set at the control end of the main crank-shaft. The cycle begins with the upward movement of the piston from its lower dead center. After the piston covers the exhaust port, compression of the charge of fresh air which has been received through the crank-case under a slight compression and been trapped above the piston, begins. During the compression stroke the piston acts as a pump, drawing air into the crank-case through an automatic suction valve. This is the scavenging air. As the piston reaches its upper dead center, the fuel is injected as described above. The compression of the air to 500 pounds has heated it, and when the oil comes into contact with this hot air the fuel burns at a constant pressure, which is approximately equal to the compression pressure, the piston moving downward on the working stroke. Expansion occurs after burning, completing the downward stroke of the piston. On this stroke the air in the crank-case is compressed. The expanded air leaves the cylinder when the exhaust ports are uncovered, and immediately thereafter the piston uncovers the scavenging or inlet port. A charge of fresh air then passes from the crank-case through the transfer passage and air inlet ports into the cylinder, thus completing the cycle.

Figure 7, a cycle diagram, shows the order of events within the cylinder during a complete cycle, namely, compression, constant-pressure burning, expansion, exhaust, and scavenging. In the illustration these events are projected through B, a cross-section of the cylinder, and the circular diagram gives the relative piston position for each event. On the left-hand diagram the pressures during these events are indicated in pounds, this being a typical indicator diagram taken from a test.

Figure 8 shows one of the important features of construction, namely, the lubricating system. The system includes a mechanical lubricator, mounted on a small platform just above the governing mechanism, an outside filter, a clean-oil circulating pump, and a used-oil two-plunger circulating pump. Lubrication is entirely automatic with this engine, as



DIESEL ENGINE PLANT PICTURES DESCRIBED IN THE TEXT

the engine turns over with an abundant quantity of clean oil supplied to all moving parts. The clean-oil pump delivers new or filtered oil to the mechanical lubricator. This is provided with an overflow, and the surplus is carried down over the eccentric and air-starting cam, collecting in the reservoir formed by the extension of the lower base that supports the injection pump and governor housing. The governor dipping in this well keeps the injection pump mechanism and the governor itself covered with oil. This well is interconnected with the main bearing oil wells, which bearings are of the ring oil type dipping into the well. An overflow is provided that maintains a constant level of oil throughout the main bearing and governor oil wells. This overflow goes directly through the clean-oil pump to the mechanical lubricator. The used oil from the crank-case is drained into a sump, from which the used-oil pump delivers it to the filter, where it goes through a slow and thorough filter process, rendering it suitable for re-use. In addition to being connected with the overflow of the oil wells, the suction of the clean-oil pump is connected to the clean-oil compartment of the filter, so that clean oil is withdrawn as needed. Since the level in the interconnected wells is higher than that of the filter, the clean-oil pump draws its supply from the interconnected wells when the level is high enough to permit a discharge through the overflow. As this level recedes, clean oil is supplied from the filter, thus maintaining a constant level in both the mechanical lubricator and the interconnected well, with no hand adjustment necessary.

Figure 9 shows the diesel engine generator set used in a plant at Quincy, Mich. The source of supply is flowing wells, and motor-driven centrifugal pumps operated by the diesel engine generator are used to pump the water direct from the wells into the city mains.

Plants with Air-Lift Pumps

Figure 10 shows the type of set most commonly used in plants having air-lift pumping. The Galva, Ill., plant consists of a diesel engine direct-connected to an air-compressor, the booster being belted to the same engine. Since one engine operates both compressor and booster pump, it is desirable to have the capacity of water from the wells into the reservoir practically the same as the capacity of the booster pump drawing from the reservoir and discharging into the mains. Such a balance obviously maintains a constant level in the surface reservoir, which can be kept practically full all the time so as to have a considerable quantity of water on hand in case of fire. This balance is accomplished by determining accurately the capacity of the well and then adjusting the speed of the centrifugal booster pump so as to give the desired discharge pressure delivering the same capacity as that secured from the wells. This adjustment is sometimes hard to make, and it is therefore sometimes found advantageous to put a float-valve in the surface reservoir to operate the compressor unloader. So as to be sure that the reservoir will stay full when this device is used, the booster pump capacity is adjusted slightly under the capacity of the wells, since the unloader regulating device is operated only at high level in the reservoir. Although air-lift pumping is not considered as efficient as some other methods, when the compressor is direct-connected and the booster pump belted, transmission losses are negligible and the over-all economy of the installation is surprisingly good. Instances of similar regulations are Polo, Ill., Dodgeville, Wis., and Fond du Lac, Wis.

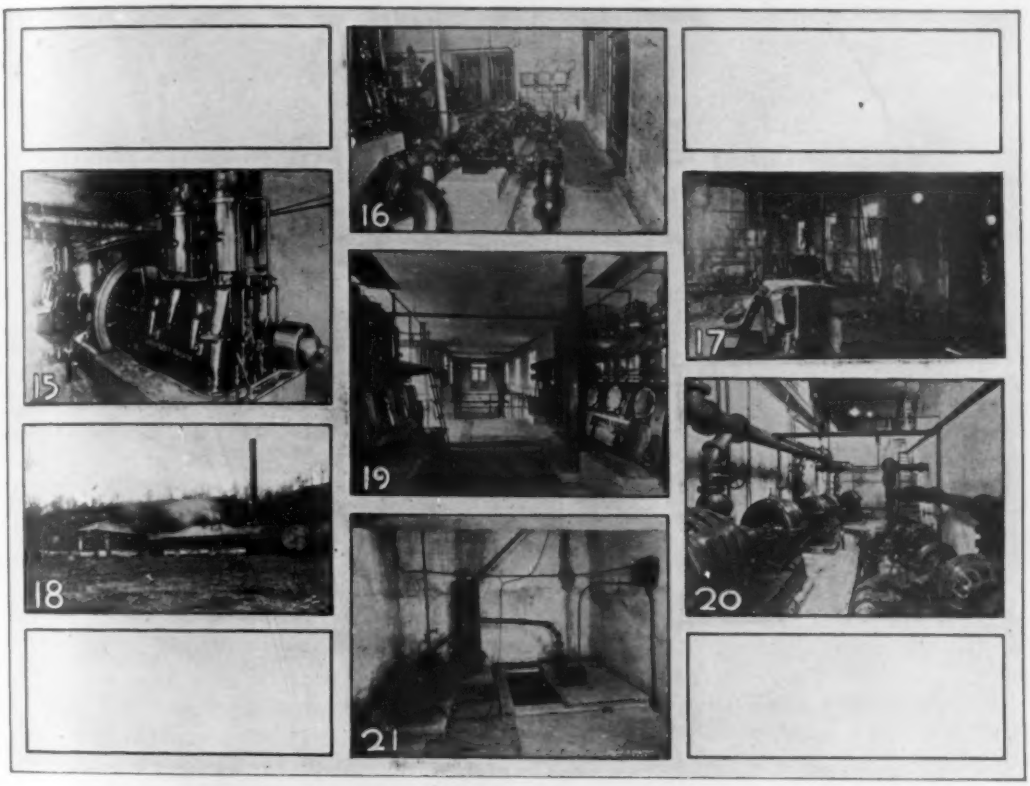
A somewhat similar installation is where a compressor is belted to one engine and the booster pump is belted to another engine. Elkhorn, Wis., has two separate engines used in this manner. It is not necessary to accurately adjust the capacity of the compressor with the capacity of the booster pump, although such an adjustment will save the operator's time. When belts are used on a job of this kind, ball-bearing belt-driven idlers which permit the use of short belt centers and which take up the stretch in the belt are favored.

When the pumping installation is of considerable capacity, or when more than one compressor and more than one booster pump are employed, it is general practice to install diesel engine generator sets, which operate motor-driven compressors and motor-driven booster pumps. The plant at Neenah, Wis., is of this type. The oil engine generator set at Neenah was purchased as a standby source of power, the plant being formerly operated on purchased power at an average of 1.8 cents per kilowatt. Shortly after the installation was made, a sleet storm brought about an offage, and the generator set was turned on. It was discovered that this would pump the water cheaper than it could be done by purchased power, so the plant is to-day being mainly operated by diesel engine generator set, the purchased power serving as a standby.

Diesels in Deep-Well Turbine Installations

Sometimes diesel engines are belted to deep-well turbines by a half-twist, as shown in Figure 11, depicting the Brookfield, Ill., installation. In this case two booster pumps are each belted to small diesel engines, using a short belt drive. A high-speed gasoline engine fire pump serves both as a standby and for fire service.

Figure 12, depicting the outside of the plant, shows very forcibly the small space required Ill., which was operated by steam prior to its alteration to a diesel engine plant. Water was secured from eight small drilled wells pumped by steam heads. The illustration shows the back yard of the pumping-station, and three derricks over the old wells are visible. A cooling tower is used in this installation, and two fuel oil storage tanks, each having a tank-car capacity, are employed. These two tanks, when filled with oil, will run the plant for almost one year, so that fuel oil



DIESEL INSTALLATIONS DESCRIBED IN ACCOMPANYING ARTICLE

for a diesel engine pumping installation. This building was designed particularly for the diesel engine equipment, so that it is very compact and is economical in construction compared to other water-works plants of the same capacity. This illustration also gives a good idea of the cooling towers used in connection with the engine-cooling water-circulating system. Such systems are employed when the local water-supply is hard, and it eliminates the possibility of the cylinder head's cracking because of scale formation in the jacket.

Rebuilding Steam Plants

Figure 13 shows the plant at Taylorville,

can be purchased on a favorable market.

Figure 14 shows the front yard of the pumping plant after alterations had been made. A general improvement is noted in the premises, and particular attention is called to the flower-beds which are located on the site of the old ash-pile, which is in the front of Figure 13. The equipment in this station consists of two similar diesel engine generator sets, each of which is capable of handling the pumping load, the second engine remaining idle as a standby unit. Suitable switchboards with all necessary instruments are provided, as well as two motor-driven booster pumps, each having a capacity equal to the city's average daily consumption.

The Taylorville installation is typical of recent tendencies and is a fine illustration of the two-unit plant being installed in cities of from 5,000 to 20,000 inhabitants. Equipment in duplicate is used throughout, so as to secure minimum fire insurance rates throughout the city, and so that the plant will be entirely self-contained and independent of outside power, insuring operation under all weather conditions.

Another two-unit plant is that at Perry, Iowa, shown in Figure 15 with its two generating sets. Water is secured from drilled wells by means of motor-driven power heads which discharge into a ground reservoir. From the reservoir the water is pumped into the mains by means of two motor-driven booster pumps. Figure 16 shows another view of this plant with its auxiliary equipment.

Larger Installations

Charleston, Ill., serves as a typical example of what has been done in installations serving larger cities. The following discussion will take up plants handling water from rivers, lakes, and reservoirs where there are two handlings, one from the source to the filter plant, and one from the clear well to the mains. Figure 17 shows the accumulation of junk inside the old plant, with the coal pile, cracked front boilers, and a maze of vertical engines driving belted centrifugal pumps located in a pit. When this plant was turned into a diesel installation, it was materially improved, an idea of the improvement being secured from Figure 18. This pumping-station is located in the valley of the Ambergris River, 2½ miles east of Charleston, Ill. The static elevation between the pump floor and the average elevation of the town is about 100 feet, making the pump discharge head, which must include friction and stand-pipe pressure, a little over 100 pounds. It is interesting to note that even with this high pressure the equipment was sold with a guarantee of a cost of fuel and lubrication of not to exceed 1½ cents per 1,000 gallons of water pumped. Official tests demonstrated that this guarantee was conservative, and acceptance was quickly made by the city officials.

Figure 19 was taken between the two diesel engine generating sets, looking in the direction of the pump pit. Immediately in the center of the illustration is the site of the old coal bunkers. Cement floors now very much improve the underfoot condition. Figure 20 shows the pump pit with the multi-stage fire pump immediately in the foreground on the left, and two motor-driven secondary pumps which handle water from the clear well to the main. On the right are two motor-driven primary pumps handling water from the river into the filtering plant, one motor-driven circulating pump for washing the filter beds, and one motor-driven vacuum pump which is piped to all the centrifugal pump casings so that any of them can be primed.

Figure 21 shows the standard horizontal motor-driven centrifugal pump equipped with an automatic primer and automatically operated for pump-pit drainage. This type of unit is becoming increasingly popular, as it takes the place of the older vertical shaft pump formerly used for this purpose. The standard horizontal pump has many advantages over the vertical, costs less to install, and is more accessible when repairs are needed. This Charleston installation has been the pride of the community and gives a good idea of what can be accomplished by the proper application of diesel engine power to municipal water-works which were formerly steam-operated. The entire outfit is being paid for out of the difference between the former coal cost and the present fuel oil cost. At the present rate of saving, the equipment will actually pay for itself in a period of not more than three years.

Another good illustration of the two-unit generator type of installation in pumping water from the river to a filter plant and from the filter plant into the mains, is that now under construction at Portage, Wis., for which Pearse, Greeley & Hansen are the engineers. Approximately $150,000 is being spent for the filter plant and its equipment.

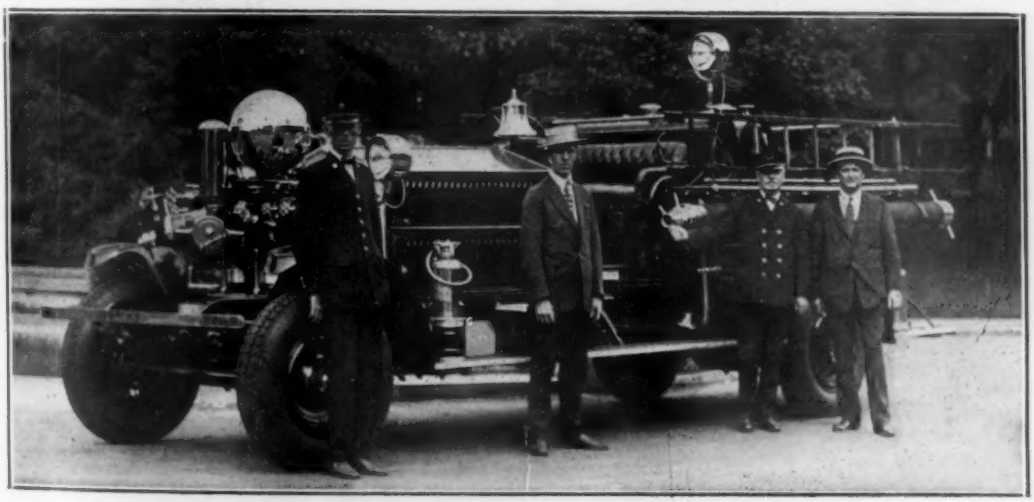
In present installations of diesel engines, which are becoming more frequent, the engines may be installed as standby units because of their dependability, but more frequently they are installed as the main source of power. The manner of applying the engine to the plant depends on the source of water-supply and whether the water must be pumped once or twice. When water is pumped once and when an air-lift pump is used, the engines are more frequently direct-connected to the pumping units. When the water is pumped twice and when duplicate equipment is used throughout, or when the installation is of considerable capacity, electrical transmission of power is most frequently used.

Fire Fighters North and South Use Motor Equipment

Photograph by courtesy of Canadian Fire Underwriters Association

FIGHTING A FIRE AT 10 BELOW ZERO IN THE HEART OF MONTREAL, CANADA

At the time this photograph was taken, there were three separate fires burning in the "inner conflagration district" of Montreal. This picture suggests the importance, in the interest of fire protection and of street traffic generally, of the use of the most modern and efficient equipment for snow removal by northern cities. This photograph has been used effectively by the National Fire Protection Association in its fire prevention work



ATLANTA'S NEW AHRENS-FOX TRIPLE-COMBINATION PUMP AND HOSE WAGON

This machine carries 1,100 feet of 2½-inch hose, has one 65-gallon capacity booster tank with 200 feet of hose, one 16-foot roof ladder, one 20-foot extension ladder, two axes, one hook, and two hand search-lights, and is equipped with pneumatic tires, double-action gong and siren. We are indebted to W. B. Cody, Chief of the Atlanta Fire Department, for this illustration and information

How the City Manager Plan Is Working—II

Answers from Chamber of Commerce Officials and Other Prominent Business Men to an Inquiry from the Editor of THE AMERICAN CITY, Recently Sent to Cities of 10,000 to 100,000 Population Where the City Manager Plan of Government Has Been in Operation for Three Years or More

(Continued from the September Number)

Long Beach, Calif.

The city of Long Beach has been under a city manager charter form of government for the past three years and during that time has grown and prospered as never before in its history. The beneficial effect of the charter in divorcing city affairs and appointing a manager free from political entanglements, on a strictly business basis, has been apparent.

Our population in 1920 was 55,593, and because of superior climatic conditions and large industrial growth has more than doubled since then. On account of this phenomenal growth, more than the ordinary problems have been presented. During this time we have voted $5,000,000 for the development of the Long Beach Harbor, which is to be one of our greatest assets. This has resulted in the reclaiming of approximately 500 acres of land, the lowest appraisal of which is far in excess of the bond issue. We have also paved hundreds of miles of streets at a cost of $7,000,000, built a city hall that cost $643,000, a city hospital costing $335,000, public schools that cost $5,600,000, and a Y.W.C.A. costing $549,000. The city has also purchased a $3,000,000 gas plant, resulting in a greatly reduced price of gas to consumers. The drilling for oil on city-owned land in the famous Signal Hill field has been efficiently handled, so that our present income from oil royalties is in excess of $1,500,000 annually.

NELSON McCOOK,
President, California National Bank.

Lynchburg, Va.

Lynchburg is now in its fifth year under the commission form of government, which has been able to get remarkable results in the form of improvement and service without an increase in the tax rate for general city purposes. The change in the form of government was from the bicameral council of twenty-four members to a council of five members. All the city government is now centralized in the city manager's office, save that of the schools, which is operated by a board of nine members, several of whom are women. Early after the change, the Council adopted a unified accounting system and a centralized purchasing system under a purchasing agent, with all departments and bureaus reorganized to conform to the new plan.

As the result of this businesslike administration of our municipal affairs, we have seen more streets improved in one year than in the last three years that the city was under the old form of government. To-day Lynchburg has the largest percentage of improved streets, when compared with total mileage, of any Virginia city. This street work is all handled by the municipal public works department. Annually around $250,000 is spent on public improvements from current revenues of the city without being supplemented by bond issues. The annual budget runs slightly more than a billion dollars, exclusive of schools.

The police and fire departments are maintained at a high degree of efficiency, and every department of the city government has been vitalized and functions in a businesslike manner.

The City Manager has the entire confidence of the Council and of the citizens at large, and he has clearly shown, through the results which he has accomplished, the wisdom in changing over from the old form of government.

Perhaps one of the outstanding achievements under this form of government has been the absolute elimination of petty ward politics. Not even a suggestion of graft has arisen, and the citizens of our city are as a unit in praising the operation of our municipality under its present form of government.

H. H. HARRIS,
President, Lynchburg Chamber of Commerce.

Michigan City, Ind.

Under the city manager form of government we have achieved two outstanding improvements that have been promised by former administrations of both major parties for at least fifteen years: first, the building of a south side sewer at a cost of three-quarters of a million dollars, now an accomplished fact; second, taking the cemetery out of politics and perpetuating it, now an accomplished fact. There have been many other worthwhile propositions put through, but these two have been the football of politics for years and are outstanding accomplishments.

LEON N. KRAMER,
President, Rotary Club of Michigan City.

Muskogee, Okla.

The managerial form of municipal government has thoroughly demonstrated to the citizens of this city that it is possible to operate and manage the affairs of Muskogee upon a business basis.

The City Manager in Muskogee has complete charge of every department of the city government and hires and discharges employees as he sees fit. Efficiency and ability to produce the maximum results govern their employment. The Manager is responsible for the expenditure of all funds and the operation of all departments. He has full authority, and there is no way in which he can escape responsibility. Jealousy and strife between departments and politics are eliminated. The affairs of this city during the five years of operation under direction of a manager have been

conducted without a deficit at the end of any year. No bond issue has been necessary or voted upon even, and business is receiving one hundred cents on every dollar expenses for governmental purposes.

C. C. LYDICK,
General Secretary, Muskogee Chamber of Commerce.

Newburgh, N. Y.

Newburgh, 33,000 population, on the west shore of the Hudson River 60 miles north of New York City, went under city manager government in 1916, the first municipality in the Empire State to do so. The change was not due to any particular dissatisfaction with the old-time aldermanic system; it was not due to a "reform" movement; it was not the result of any desire for a political or civic upheaval. The step was taken in the belief that it was constructive and would result in the best possible administration, and so time and experience have proved it.

Under its city manager charter, Newburgh has been able to achieve all the things which its progressive and intelligent citizenship deems needful and desirable and at the same time keep its tax rate lower and its public debt smaller than those of the great majority of cities, not only of the state but of the country.

Newburgh's streets are improved and kept clean; its lighting system has been modernized; its water-supply added to; its fire department fully motorized; its sewerage system extended; and its police department augmented.

Officials, business men, and citizens have entered into the very spirit of city manager government, with the result that every one of a score or more business, civic, and service organizations, led by the Chamber of Commerce, is working enthusiastically for the promotion of Newburgh's welfare. Newburgh is proud of its government, and never in the ten years of city manager control has there been so much as a suggestion for a return to the former régime.

CALVIN D. MYERS,
Managing Editor, *Newburgh Daily News.*

New London, Conn.

The council-manager plan of city government has met with decided success in New London. It has been in operation here now for about four years. It has not accomplished wonders—that cannot be expected. New London is a very conservative old city. It is extremely difficult to put through advanced ideas in city administration. We have too many prejudices and traditions to overcome. New London was the first city in Connecticut to adopt the council-manager plan of city government, and it must be regarded as extraordinary that we were able to persuade the citizens to try it.

This can be said—the council-manager plan has greatly simplified the problems of city government here. We have eliminated sinecure office holders. We have built up an efficient working force in all departments, and the taxpayers are getting 100 per cent value for all the money they pay into the city treasury. The tax-rate has been reduced from 30 mills to 26 mills. We have important things yet to accomplish in the way of public improvements; their consummation depends upon the cooperation of our City Council of seven. So far the members of it have lacked sufficient vision and courage to go ahead and do some essential things. However, progress is being made despite inherent prejudice and veiled opposition of old-time politicians. It is clear the people of the city are so well satisfied with present conditions that they do not care to go back to the old form of government with its favoritism, waste, and insufficiency.

THEODORE BODENWEIN,
Publisher, *New London Day.*

Newport News, Va.

During the four and one-half years that the city manager form of government has been in operation in Newport News the city has increased its paved streets and sewer lines by over 100 per cent; has decreased operating expense by over $50,000 annually; has constructed two modern high school buildings, and remodeled grade school buildings to accommodate full-time attendance. The health conditions in Newport News are now recognized as the best in the state of Virginia. We have exceptionally fine fire and police departments, and the affairs of other departments are administered by men qualified by training and experience and not politics. The tax-rate is low and the bonded debt is only 43 per cent of the city's bonding limit. Our city is very enthusiastic about the city manager form of government and would not think of going back to the old form.

O. A. REYNOLDS,
Secretary, Newport News Chamber of Commerce.

Phoenix, Ariz.

The city charter of Phoenix, changing the form of government from the old mayor-council system to the commission-manager form, was adopted April 7, 1914. While growth had been continuous up to that period, progress has been more rapid since; politics have been eliminated; graft is more difficult, hence easier to prevent; more efficient work is done by employees, and there is no tendency on the part of trouble-makers to upset existing government.

One of the chief improvements has been the building of an adequate water-supply system. The old water-works consisted of deep wells and pumps which were inadequate to supply a sufficient amount of water or to furnish necessary fire protection. Many obstacles had to be overcome in the building of a pipe line and reservoir to bring in pure, soft water from the mountains forty miles east. It would have been very difficult to accomplish this under the old form of city government. Under the present plan, a civil service system for employees has been inaugurated and a platoon system for the fire department adopted. Parks have been purchased within the city limits, and are being developed. The sewerage system, which was formerly owned by private interests, has been taken over by the municipality, and has now been extended to cover the entire city and greatly improved. Within the city limits there are some 30,000 shade trees. A city forester has been appointed to see that these shade trees are maintained, properly irrigated, pruned, and taken care of. Perhaps the accomplishment which will in after years stand out as the one greatest achievement, is the purchase of a mountain range consisting of some 14,000 acres.

This mountain range is at its closest point about six miles from the city limits, and is to be developed gradually, as time and money will permit, into a playground and recreation field for the citizens of the city and surrounding country. So far as we know, this gives the city of Phoenix the largest park in area of any city in the world.

F. J. ELLIOTT,
President, Phoenix Chamber of Commerce.

Portsmouth, Va.

Some of the outstanding achievements of our city manager government include the following:

The budget system has been definitely adopted and the expenditures of the departments kept within the appropriations made in the budget. A centralized purchasing system has been established, which has resulted in very large savings. Savings have also been effected by paying bills within thirty days and thus getting the benefit of discounts. All purchases of any importance are made on a competitive basis after public advertising.

During the last four years, three playgrounds, two for white and one for colored children, have been developed and equipped with band-stands. A municipal park of sixty acres has also been provided for with flowers, roads, pavilions, lagoon, playground, and municipal golf course, to which will be added this year tennis courts, football and baseball fields. The health of the city has been much improved and the death-rate greatly reduced.

In the last four years, the mileage of paved streets has been more than doubled, forty miles of curb and gutter constructed or contracted for, and the mileage of sewers increased 300 per cent. During the last year, a new and sanitary market has been completed and opened, where meats, poultry, vegetables, and fish are displayed for sale in an attractive and wholesome manner.

Portsmouth has received good returns for its investment in the city manager plan and we have no hesitancy in expressing our complete satisfaction with this form of government.

GEORGE H. CLESS, Jr.,
Executive Secretary, Portsmouth Chamber of Commerce.

Sacramento, Calif.

The business men of Sacramento generally are heartily in favor of the city manager plan. The tax-rate has been reduced each year since inauguration. The police and other departments are more effective. A greater program of improvements has been carried on more economically during three years of city manager government than during any ten-year period previously. The manager plan has gone a long way toward eliminating politics in city government.

IRVIN ENGLER,
Secretary-Manager, Sacramento Chamber of Commerce.

Salina, Kans.

Salina has had the commission-manager form of government for a little over three years. During these three years, Salina's tax levy has been the lowest of any city in Kansas, be it first, second or third class, with the small exception of three cities.

The city tax levy has decreased each successive year—1923, 1924, and 1925. On January 1, 1922, the general fund of the city was in the red to the amount of $14,000, and on January 1, 1925, the city had cash on hand, including an uncashed warrant for the Salina Water Works Company, to the amount of $133,543. The total saving from the budget for the last three years amounted to $124,000. During these three years the city sinking fund has been increased from $24,000 to $74,000. During the year 1924, the city received in excess of $5,000 as interest on time deposits and daily balances.

During this three-year period, extensive improvements have been made by the city administration in the park systems, a municipal swimming pool has been constructed, and many other improvements have been made. The city has never been better governed or in better condition generally for a similar period of time, than during the last three years under the commission-manager form of government.

EARL C. WOODWARD,
President, *The Salina Daily Union.*

San Jose, Calif.

The city of San Jose, with a present population of approximately 74,000, adopted the city manager form of government July 1, 1916. It can truthfully be said that this system has largely eliminated city politics—at least all of its objectionable features—and the various evils that accompanied the old form of government; it has coordinated the various city departments, making them more efficient; it has placed the important city positions under civil service rules; it has placed responsibility on the City Manager, so that every taxpayer may know just where to go for information or to make complaints; it has introduced an up-to-date system of accounting that makes for economy in the several departments; it has taken politics out of public schools. The operation of this system has brought about a healthier moral tone in the community; the saloons were abolished long before prohibition became national; the red-light districts followed, and Chinese lotteries and gambling subsided into a minor and sporadic evil. San Jose is operated at a much less per capita cost than California's other cities, this being about one-half that of cities in the state of about the same size and population.

WENDELL C. THOMAS,
Managing Director, San Jose Chamber of Commerce.

(*To be continued in the November number*)

A BUSINESS ADMINISTRATION FOR THE MUNICIPALITY

If, therefore, it is desired to equip the city with a business government, why not follow the business analogy to its logical conclusion by providing that the commission, instead of trying to perform the work of administrative supervision through its own members, shall employ a general manager for this purpose!

—By William Bennett Munro, in "Municipal Government and Administration." (Copyright, 1923, by The Macmillan Company.)

Snow-Removal in Massachusetts

Cooperation of State and Town Highway Departments Maintaining Roads Under Severe Conditions

MASSACHUSETTS has one of the most complete snow-removal systems in the United States. A snow-storm which occurred on January 21, 1925, served as a test of this system, which was originated in the fall of 1923, but has since been revised and improved. Valuable facts concerning the removal of snow from the main highway route in Massachusetts have been ascertained as a result of the experience in the last two winters. Last winter was the second in which Massachusetts authorities have endeavored in a comprehensive manner to keep the roads open for traffic, and the work has been done efficiently as well as cheaply in cooperation with the cities and towns. It has been found that further snow removal can be undertaken on an even more comprehensive scale without danger of bankrupting the state or the municipality.

REMOVING SNOW FROM MASSACHUSETTS STATE HIGHWAYS WITH PUSHER PLOW AND FWD TRUCK

When snow removal on a big scale was discussed three years ago by the State Highway Commissioners and representatives of motoring interests, the opinion was generally expressed that the expense of the undertaking, except in a limited way, would be prohibitive. It was felt that for the state to do the work alone would be impossible and that it was also out of the question to unload it upon the towns. The necessity of keeping the main routes open, was recognized, however, and the following summer and fall the Highway Commissioners ordered a plan of cooperative snow removal, which was put to its first real test in March, 1924.

The original plan was to have the State Highway Division keep two important routes clear, it being understood that half the cost would be assessed back upon the town. The Highway Division also provides trucks, plows, and tractors to municipalities, which operate them under the supervision of highway division engineers.

All of the route which it was planned to keep open was successfully opened and kept open throughout the winter of 1923-24. The most exacting test during that season was the March blizzard of 1924. At that time those in charge of snow removal had begun to feel that winter was over, and when the heavy snow descended and then froze, the weather was a little too quick for the workers, so that in places there were temporary blocks. This was due to the fact that the vital principle of snow removal—to begin with the storm and keep at it until the storm ends—was ignored.

For the most part, the snow removal was accomplished successfully in 1923-24 by trucks equipped with blade plows. The state had in its equipment some 50 former Army trucks and about 10 tractors, which were distributed to strategical points throughout the state. The other equipment consisted of 200 plows, which were loaned to cities and towns that supplied their own motive power in the form of trucks. In addition, some of the counties did much work with their own equipment. Generally speaking, the powerful truck with a plow in front has proved to be the most useful piece of machinery for combating snow where it is not too heavy. The state's work on the two main routes kept open was done at remarkably low expense, having cost up to the time of the March blizzard only about $20 a mile on one route and $30 on another.

The result obtained during the winter of 1923-24 served as a basis of determination of the present policy of the state in the matter of keeping the roads open in winter. Several lessons have been learned in addition to the

facts of the apparent inexpensiveness of the work and the certainty that it can be done successfully with proper equipment. One of these lessons is that if snow is to be removed, it should be plowed close to the surface of the road. Another is that the traffic on the road determines to a considerable extent the cost of snow removal. Another result that seems fairly apparent is that it is unjust to expect the small towns having a large mileage of state road to do a very large share of the work at their own expense.

In some parts of the state there have arisen objections to removing all the snow, as farmers and others who wish to use their sleds on the state roads find themselves at a distinct disadvantage. Since the greatest good to the greatest number must decide the policy, these complaints will have to be ignored, for it has been found that even if a few inches of snow are left, ruts will develop which make driving dangerous for all sorts of vehicles and which tend to wear out the roads unduly. Whether the roads as a whole benefit from complete removal of the snow is a problem on which authorities are not agreed. Some claim that with the snow removed, the wear of the traffic is evenly distributed, to which the answer is made that with a blanket of snow and ice there is no wear on the road surface. The advocate of complete removal comes back with the statement that with a coat left, ruts develop which are dangerous to traffic and which permit a pounding on the road in one line so that holes are developed. Whether the action of the frost upon covered or uncovered ground is the more serious is a question that is easily studied.

The first real test of last season did not come until January 21, 1925. Following the heavy snow-storm of that morning, which covered all of Massachusetts and accumulated to a depth of 8 to 12 inches, the main routes were cleaned so effectively that by the following morning it was possible to travel the length and breadth of the state over plowed roads. Even earlier than that, practically all the main lines were open by 10:30 Tuesday night, about 2½ hours after the storm ended. Never before have the roads been cleared as well and as quickly.

It is estimated that over 400 road snowplows were combating the storm. These included the state-owned trucks and plows, most of them loaned to cities and towns for snow work, the Federal-owned trucks, turned over to the state and in turn loaned by the state to the municipalities, and trucks and plows owned by cities and towns and counties. The trucks and plows did such effective work in bucking the snow that it was unnecessary to call out the large tractors which are considered the heavy artillery of the snow-fighting force.

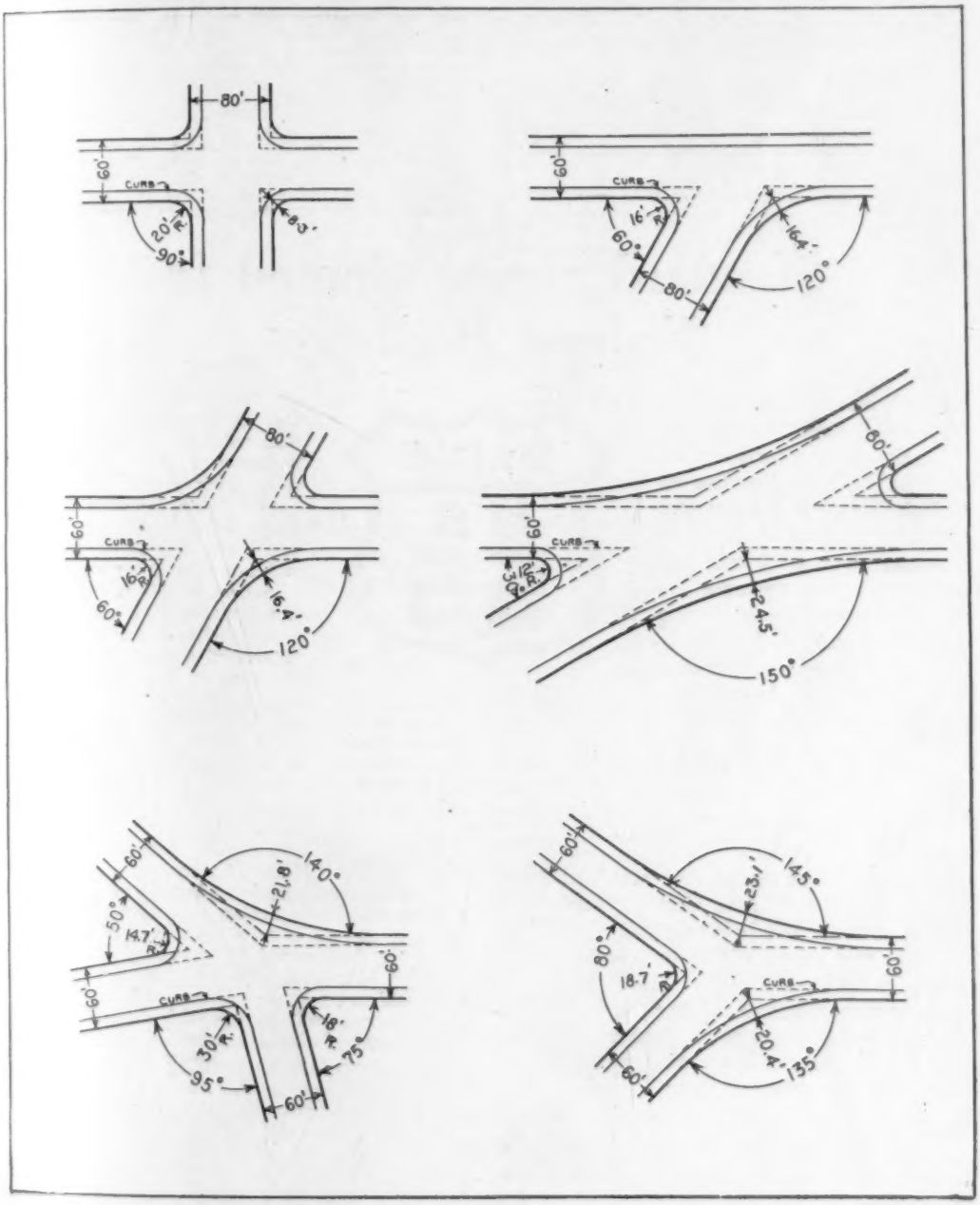
The reason why the snow-removal plan worked so well on Tuesday was that, almost without exception, those charged with doing the plowing obeyed the instructions that had been given them early in the season, that they must begin to plow as soon as the snow began to fall and must keep it up until the storm ended, so that the snow would have no chance to accumulate. The Commission carried out its plan of giving radio warning of the severity of the storm and on Tuesday morning broadcast information that the storm was likely to be a heavy one. But even before that bulletin was sent out through several broadcasting stations, snow fighters were at work all over the state. They devoted their attention primarily to keeping the main roads from becoming blocked with snow and in this were so successful that, with one exception, the Commission has not heard of a place on a through route where vehicles were unable to pass all night Tuesday.

Several months before the winter season of 1924-25 the Department of Public Works assigned plows and trucks to communities along the main lines of travel throughout the state. There are 225 such plows and 87 trucks. The arrangement agreed upon with the cities and towns was that the plows and trucks were to be used first to remove the snow from through routes. Afterwards, if the communities desired to do so, the machinery could be used on city and town streets and roads. The tractors were kept in control of the state for use in any section where the snow became too deep to be handled by the plows.

In accordance with the agreement, the cities and towns became busy Tuesday upon the trunk lines of highway in the vicinity of their particular locality, and they kept the plows going steadily all day and most of Tuesday night. In addition to the state apparatus, snow-fighting apparatus had been purchased by a great many municipalities since the previous year, and these municipally-owned plows and trucks served to augment the state fleet. The success in clearing the main roads Tuesday night made it possible to devote the plows to secondary road work on Wednesday and Thursday, and reports showed that never before in the history of the state had the roads been made passable after a heavy snow-storm so quickly and so effectively as during the blizzard of January 21, 1925.

Street Intersections and Traffic Relief

THE intimate relationship between the arrangement of street intersections and the ease, speed and safety of traffic is emphasized in the pamphlet on "Land Subdivisions and the City Plan," by Herbert S. Swan and George W. Tuttle, published as a supplement to the *National Municipal Review* for July, 1925. Through the courtesy of Mr. Swan, THE AMERICAN CITY is enabled to publish the accompanying reproduction of a group of his plans showing treatment of street intersections as recommended. The following paragraphs comprise the section on "Enlargement of Street Intersections," from the pro-



ARRANGEMENT OF VARIOUS TYPES OF STREET INTERSECTIONS

posed rules for the guidance of planning commissions, as given in the pamphlet:

No intersecting streets shall be laid out with the angle included between adjoining street lines less than 30° nor greater than 150°.

Street intersections shall be enlarged by the following minimum amounts:

If the angle included between the adjoining street lines is 90°, then these lines shall be joined by a curve with a radius of 20 feet, the external secant of which is 8.28 feet.

If the angle included between the adjoining street lines is less than 90°, then these lines shall be joined by a curve with a radius of 20 feet, minus 1.6 inches for each degree that the angle is less than 90°.

If the angle included between the adjoining street lines is greater than 90°, then these lines shall be joined by a curve with an external secant of 8.28 feet plus 0.27 feet for each degree that the angle is greater than 90°.

This rule relates to street intersections only. It provides for rounding corners and enlarging the area of street intersections so as to facilitate the turning of traffic into the cross-streets.

Traffic congestion is generally greatest at intersections where the traffic on both streets crosses in the width of one. The capacity of streets is often reduced one-half, and sometimes even more at intersections. It is therefore of the greatest importance to arrange intersections so that traffic will have sufficient room to flow smoothly around corners.

To avoid traffic interferences as well as uneconomical and awkward property subdivisions, street intersections of less than 30° or more than 150° (the supplementary angle) are prohibited.

At right-angle intersections the corners are turned with a radius of 20 feet. With sidewalks 10 feet or more in width, cars will have no difficulty in turning close to the curb. The street corner is set back 8.28 feet.

From 90° down to 30° the street corners are rounded with radii decreasing with the angle. The radius of the street corner decreases uniformly for each degree decrease in the angle of intersection until at 30° the radius becomes 12 feet. This allows a width of 24 feet at the corner, which is sufficient frontage for satisfactory development. At the same time, the corner is pushed back 24.36 feet and thereby gives the necessary increased room for turning vehicles.

From 90° up to 150° the street corners are rounded with radii increasing with the angle. The setback from the corner increases uniformly for each degree increase in the angle of intersection until at 150° the radius becomes 693.95 feet and the setback 24.48 feet.

Standard Signs Adopted for Federal Highways

THE standard signs which have been adopted by the Joint Board on Interstate Highways for use on United States highways are of such a character that even a person who cannot read will understand the meaning of those indicating danger by the shape and color. The signs are of two general classes. One group, the danger and caution signs, will consist of signs of four different shapes representing as many degrees of danger. These will have a yellow background with black letters and symbols. The other group will include the standard route marker in the form of a United States shield and directional and informational signs. All signs in this group will have a white background with black letters.

STANDARD ROUTE MARKER ADOPTED BY THE JOINT BOARD ON INTERSTATE HIGHWAYS FOR USE ON ALL UNITED STATES HIGHWAY ROUTES

The color scheme will be black and white

Distinctive features of the various signs are outlined as follows in a statement from the office of the Secretary of Agriculture, released on September 5, 1925:

The standard railroad-crossing sign will be round, 24 inches in diameter, and will bear the well-understood railroad cross with the letters RR in black in the upper quadrants on the yellow background.

At points of sufficient danger to require a complete stop, the sign will be octagonal in shape, 24 inches in size, and will bear on the yellow background the word STOP in large black letters.

At curves, narrow bridges, steep hills and other points where the degree of danger is sufficient to call for the exercise of a considerable degree of caution but not a complete stop, a diamond-shaped yellow sign will be erected with the character of the danger described in black letters and symbols. This sign will be 24 inches on each side.

At points of lesser or occasional danger the 24-inch square yellow sign will be used and the necessity for caution will be explained in black letters in a single word, such as SCHOOL, HOSPITAL, CHURCH, etc.

The standard shield adopted as the route marker will be 16 inches vertically from tip to tip. At the top it will bear in black letters on the white background the name of the state in which it is erected, and below, in the section of the shield in which the red and white stripes ordinarily appear, will be the initials U. S. and the route number in large numerals.

At the approach to forks or junctions of the interstate routes with other roads, a smaller shield, 9 inches from tip to tip vertically, similar to the route marker but bearing the single letter R or L, will be erected below the numbered shield to indicate whether the United States highway branches to the right or left.

Distances along the main routes to cities and

towns will be indicated on rectangular white signs with the names of the points and the distances to them and an arrow pointing the proper direction in black.

Distances to points not on the interstate roads will be posted at the intersecting routes leading to such points. The signs, also rectangular, will bear the names of the cities with distances to them in miles in black on the white background. No arrows will be used on these signs. The side of the road on which they are posted will indicate the direction.

In addition to these signs, rectangular white and black signs will be erected at physical features, such as creeks, rivers, lakes, etc., crossed or passed by the interstate roads; and the traveler will be notified at points where the speed limit is changed by a standard black and white sign prescribing the speed limit.

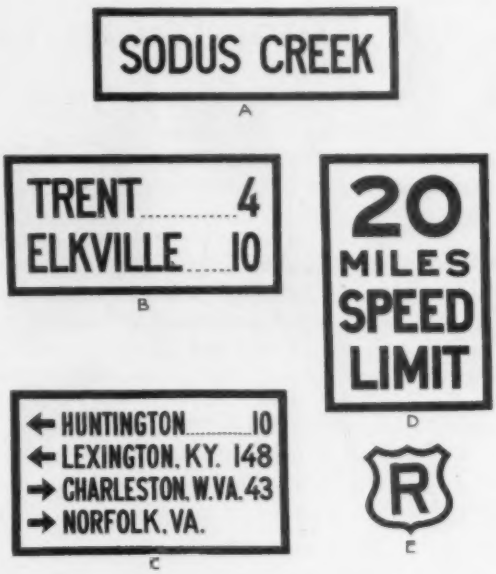
In the series of caution and danger signs the degree of danger is signified by the shape as well as the wording or marking of the signs. A round sign will be used only at railroad crossings; an octagonal sign will be used only at points where a complete stop is demanded by extreme danger ahead; the diamond-shaped sign will always indicate to the driver of a motor vehicle, even though he be color blind and unable to read, that there is some road condition ahead which calls for the exercise of caution. The square sign will invariably indicate the need for a lesser degree of caution.

Yellow is the color of danger or caution. Wherever the motorist sees yellow he will know there is some degree of danger ahead. The white signs will give him information and guidance, but will not call for caution.

The system of interstate highways on which these signs will be erected was designated recently by the joint board of state and Federal road officials. A committee of the board is now working on a numbering scheme and it is expected that maps of the routes selected with the numbers indicated will be available in a reasonably short time.

CAUTION SIGNS TO BE USED ON UNITED STATES HIGHWAYS

These signs will have a yellow background with black lettering and border



INFORMATIONAL SIGNS FOR UNITED STATES HIGHWAYS

These signs will have a white background and black letters: A. To indicate names of rivers, creeks and towns. B. For use at crossroads to indicate distances to points on the route. C. For use at any point to indicate distances to points on the route. D. Speed limit sign. E. To be placed beneath standard route marker to indicate that branch route follows

PLAN FOR SAFETY

Averted accidents prove that an ounce of prevention is worth a pound of cure. Sowers of safety are the reapers of happiness. The time to prevent an accident is before it happens.

—From *Rochester Commerce*, published by the Rochester (N. Y.) Chamber of Commerce.

A Comparison of Typical Concrete Road Sections

Author Uses Illinois Section as Standard for Convenience

By H. Eltinge Breed
Consulting Engineer, New York City

EACH state has specifications which its highway department uses more freely than it does others and which, therefore, for convenience' sake, we may regard as "typical" of that state. Actually, every state represented in this discussion varies its plans to suit the varying conditions which affect road building, so that comparisons drawn in regard to the so-called "typical" sections may apply to only a fractional part of their concrete roads, but, because it is interesting to try to understand the motivation of the various designs in use, a comparison may be made to ascertain, if possible, how far the differences are differences of opinion, of aim or of tested method.

The Illinois section was developed by Clifford Older because of observed slab weaknesses in concrete road design. It is based on a recognition of three fundamental weaknesses in the plain concrete road, namely, corner breaks, edge weakness, and longitudinal cracking.

To check the tendency of the slab to break at the corners and to break at the edge from contraction cracks, thus making new corners, Mr. Older developed the following formula: thickness of the slab equals the square root of the maximum wheel load divided by the safe working percentage of the value of the modulus of rupture of the concrete used. For an interior thickness at least 4 feet from an unsupported edge, the pavement may be reduced to 7/10 of the edge thickness derived, and the thickness of an edge adjacent to an efficiently dowelled joint may be 7/10 of the edge thickness derived.

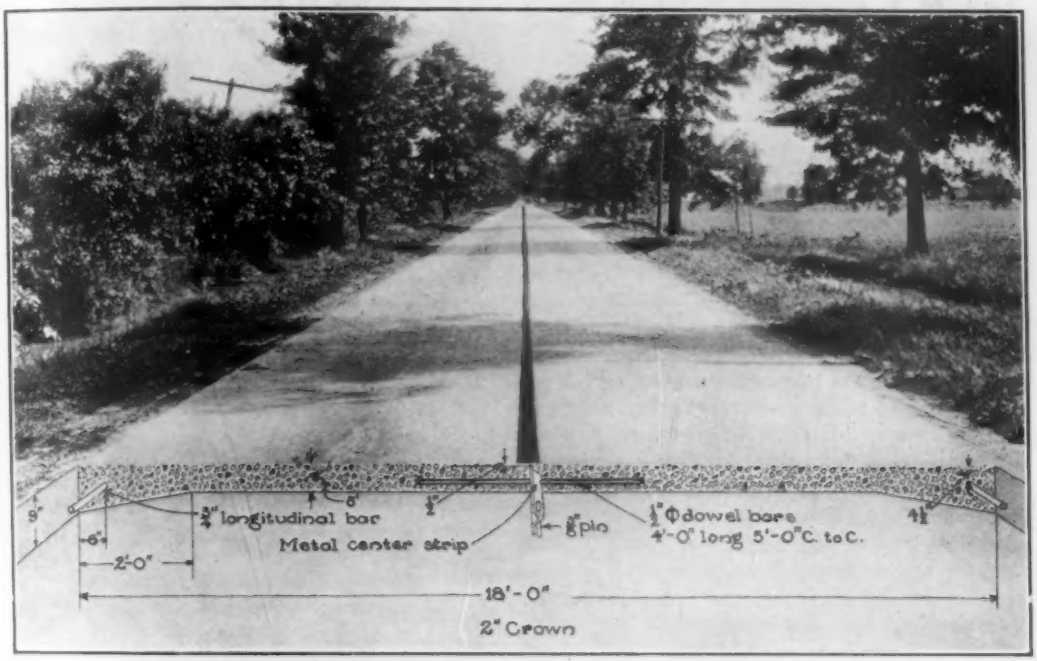
To check the tendency to longitudinal cracking, Mr. Older introduced the longitudinal joint, making it tongued and grooved to transfer part of the load to the adjoining slab. The section used is plain concrete with one shear rod of ¾-inch diameter, 6 inches from the outer edge, and 4-foot by ½-inch dowels across a longitudinal tongue-and-groove center joint every 5 feet; an edge thickness of 9 inches, tapering in 2 feet to 6 inches or 7 inches thick for the remainder of the half-section. There are 1,858 cubic yards of concrete in the 9-6-9-inch section per mile of 18-foot pavement.

This is a development of the Bates Road test made under Illinois soil, load, and climate conditions for a limited period. It therefore comes the nearest to an ideal pavement for that particular state. Before using it as a standard for comparison, it is necessary to make some comment on the conditions for which it is particularly favorable.

Subsoil Conditions.—Although there was a considerable variation in per cent of moisture in the Bates Road test, nevertheless there was not at any time a condition of such instability as to cause the slab to float, nor of such rigidity as to permit the concrete to warp away from it entirely. A certain percentage of moisture is advantageous in a soil at any time except in the season of frost. This advantageous range was apparently found in the Illinois soil, and it provides an excellent cushion under the pavement to absorb shock and so relieve the rigid slab of some of the severest stresses. There is enough compressibility of subgrade to permit the pavement to deflect only within its safe limit. Freezing of the subgrade with the resulting excessive expansion is a slow, gradual process through the concrete, and constant traffic may readily keep it down in reasonably good contact during the whole process of freezing and thawing. Frost conditions were not severe during the test period.

For this condition a plain concrete section can reasonably well be designed if the unsupported edges are made stronger per unit of width than the center. Theoretically, a load at the edge causes a warping downward so that radial elements of concrete in the semicircle about the load act to support it, whereas a load placed in the mid-portion is sustained by radial elements in a complete circle: so it may be reasonably assumed that half a central load may be supported at the edge by a slab of uniform thickness, whereas the same load may be carried equally well all over when the edge thickness equals the square root of 2 multiplied by the center thickness, or, inversely, when the center

thickness is the square root of ½ multiplied by the edge thickness or 0.7 times the edge thickness. This has been substantiated experimentally, according to the published conclusions of A. T. Goldbeck of the U. S. Bureau of Public Roads. Since the same reasoning shows unsupported corners to be still weaker points, it is necessary to overcome that weakness by support from an adjacent corner so that load distribution may as nearly as possible be carried over the same semicircle as along the unbroken edge. The one edge bar of steel provided in this section is indicated for that purpose. If, in caring for shear across a joint or crack, a high intensity of bearing develops from the steel against the concrete, it may ultimately fail, but even in that event the failure is indefinitely delayed. If the edge bar is bonded securely throughout its length, it will be unsatisfactory across expansion joints, because excessive deformation may cause rupture.



CROSS-SECTION OF STANDARD ILLINOIS CONCRETE PAVEMENT

Illinois does not use transverse joints for expansion, on the theory that blow-ups from expansion are so few that it is more economical to take care of them than it would be to maintain 100 or more transverse joints every mile.

A logical consideration of the relative merits of various road-slab standards would include three groups of factors having a bearing on the effectiveness of design: (1) the expected duty of the slab; (2) variations and limitations in load on, and supports under, the slab considered as a structure; (3) the number, kind and behavior of extraneous agencies with which the slab has to contend in performing its required service.

First, the duty of the slab is to transmit to the subgrade and distribute over it the concentrations of loads from moving vehicles in such a manner that vertical movement does not cause a permanent distortion and disruption of the desirable smooth-riding surface. To do this, it is necessary that the slab be a structural unit capable of transmitting load through its elasticity of material in directions at right angles to that of the applied load. It is also necessary that the material be of sufficient strength in adequate amounts properly placed and of sufficient durability to transmit, and continue indefinitely to transmit, the maximum load to the subgrade when it is least resistant.

Second, at any time the concentrated load is equal in value and opposite in direction to the resistance developed in the subgrade. The latter is distributed over an extended area in which the intensity will vary for any given soil conditions from a maximum under the load to zero at the limits of the area; the maximum intensity will vary in value also, depending on the nature, moisture content, and temperature of the underlying soil. A

wider distribution area usually means greater slab deformation, with probable greater stresses in a given unit under a stated load. The merits of a design will depend on its ability to meet the conditions under the worst combination of the state for which the standard has been adopted; that is, the heaviest load and the least bearing value of the subgrade.

Third, the extraneous forces with which the pavement has to contend other than those before referred to are due mainly to the action of the weather on the slab itself. Since this action is necessarily accompanied by the action of traffic, the combined effect must be a determining factor in design. Seasonal temperature changes cause a more or less uniform kind of stress to be set up across any vertical plane section and are comparatively easily analyzed. Daily and hourly temperature changes are more rapid and erratic and, because of low heat conductivity of the paving material, act on the exposed upper surface more quickly than on the bottom, thus causing non-uniform volumetric changes with consequent severe internal stresses and warping. In a similar way, volumetric changes develop from constant wetting and rapid drying due to rain and flood on the exposed surface and from variations in moisture content of the subsoil on the bottom, all of which tends to produce warping, together with destructive stresses. The combination of moisture with freezing conditions aggravates the evil effects in the form of excess stresses set up both in the structure and in the material.

The details of design are numerous; the combinations of details are infinitely more numerous, so that an "absolute standard of sufficiency" cannot readily be established.

Two opinions of major importance influencing the writer's judgment are: First, the use of steel in limited quantities is to keep close together all the parts into which the ordinary slab will inevitably break, so that the eventual destruction of the pavement may be materially delayed. This is based on the well-established fact that any rigid material of high absorption, of low heat conductivity, susceptible of large volumetric changes, and having comparatively low strength, will on exposure to weather deteriorate with age, even without the accelerating action of traffic, and when breaks do occur, there is still mutual assistance between parts as long as there is an interlocking between irregular broken faces, a condition which may be prolonged if there is steel enough to prevent the creeping apart of the pieces. Second, steel is essential to preserve the integrity of the slab in the first 28 days of the pavement's life, for when cement and aggregate are mixed with water, chemical changes begin which convert the plastic mass into a material whose strength in tension and compression increase with age. Evidence of these changes is the hardening or "set" of concrete, which occurs within 24 hours after the mix is laid. Its tensile strength or ability to withstand pulling apart is practically nil on the first day, increasing at a varying daily rate, until at the end of the 28 days it has 90 per cent of the strength which it will have at two years; at 3 days, it has 34 pounds tensile strength; at 7 days, 61 pounds; at 10 days, 81 pounds; at 14 days, 95 pounds; and at 21 days, 190 pounds. These figures represent values found in the laboratory.

Unfortunately, the changes in the drying-out of concrete during the increase of its tensile strength also set up destructive stresses due to expansion and contraction. As the moisture is evaporated from concrete, its bulk thereby diminishes and the mass contracts. In general, the tendency is to shorten its length. The pull comes between different sections of the mass. If, on the other hand, because of different conditions, expansion occurs, you have first push and then pull. If the resistance can be fostered to withstand this pull, the pavement holds its integrity. If it cannot, these sections yield to the pull and separate, leaving cracks between them which subsequently widen. It is these cracks that require maintenance and menace the life of the pavement by multiplying the places of weak resistance to impact. Devices have been tried to substitute moisture to replace that evaporated and so give the concrete a chance to establish some strength before meeting these severe stresses, but none of these—wet burlap, sprinkling, or straw or earth covering—has been wholly satisfactory, though they have helped. The difficulty is that the moisture cannot be supplied to the pavement as fast as it is evaporated or at the same uniform rate. Also, when the pavement is sprinkled, some of the water is bound to run off the edge of the pavement, where it causes volume changes and sets up other stresses.

The wide difference of opinion on these matters, as well as great difference in physical conditions, is indicated as soon as we begin to compare the different types of design in use among the various states.

Connecticut

The typical Connecticut road slab has a uniform thickness of 8 inches, and transverse expansion joints spaced 40 feet apart, with the joint made of ½-inch premolded joint filler. There is a plain longitudinal joint throughout without dowels or tie-bars, and the reinforcing is a ¾-inch edge bar on each side of the slab and across its end. This bar is placed 2 inches below the top and the corners are further strengthened by having two additional ¾-inch bars in the outside corner and one additional ¾-inch bar on the inside corner, placed radially to the corner and 2 inches below the surface. All bars used are deformed. For main trunk-line design the slab is increased in thickness to 9 inches throughout, and is usually of a unit width of 9 or 10 feet.

The two slabs are not tied or doweled in any manner, and the plain longitudinal joint is used, so that the large amount of heaving due to frost will not damage the joint or affect the other slab.

Pennsylvania

The typical road slab in Pennsylvania has a width of 18 feet with a longitudinal tongue-and-groove joint using 14-gage metal plate with ½-inch tie-rods spaced 5 feet on centers. Two bars are used along the outside edge and one each side of the longitudinal joint. These latter are supported on chairs. Joints are placed at noon and night, and in addition where specified in the plans. Plans call for a 7½-5½-7½-inch or 8-6-8-inch slab on secondary roads, and 8½-6½-8½-inch slab on trunk-line highways, a 9-7-9-inch slab for extra-heavy traffic, and a 9½-7½-9½-inch for Philadelphia suburban roads.

This section most nearly approaches that of Illinois of any of the eastern states.

Delaware

The Delaware slab is 16 feet wide with an edge thickness of 8 inches, a center thickness of 6 inches, and a longitudinal joint with a plain centerplate with ½-inch deformed tie-bars, 4 feet long, spaced 2 feet center to center, with no reinforcement except in special cases, and then as shown on the plans. Transverse joints, where placed, are doweled and provide no expansion.

The 8-6-8-inch section, while too near the limit of safety for the usual eastern traffic, is justified by the uniformity of soil conditions met with in 80 per cent of the state. In the other 20 per cent of area, special design has been provided. This section is still further justified by the fact that the number of repetitions of stress from the maximum loading are not frequent enough to do sufficient damage to offset the saving in this design.

The theory advanced for not providing expansion joints is that in the northern section of the state in general only contraction cracks that cause little trouble occur, while in the southern section in the sandy soil there are few cracks and the blow-ups are of such infrequent occurrence as to require very little maintenance.

New Jersey

New Jersey has a uniform slab thickness with a longitudinal center joint not tied with tie-bars and transverse joints, as indicated on the plans, with a joint material ½- and ¾-inch in thickness, either of the premolded type or a poured joint filler. Dowels are used across the transverse joints with reinforcement mesh or bars as specified, one layer 2 inches from the top, and the other 2 inches from the bottom, with 2.44 times as much steel in the bottom layer as in the top. The width of section is usually 20 feet, and the dowels across the joints are used for corner protection.

The slab, being uniform in thickness and 20 feet or greater in width, compares favorably with the Illinois section because of the fact that the additional width of one foot on each side keeps the heavy loads farther from the edge, and in addition to this there is steel to help in taking both direct and reversed stress. The tie-bars through the longitudinal joints are left out because the slabs when acting as a hinge will stretch the tie-bars, and as the opening made by the hinge becomes filled with non-compressible matter, the tie-bars will be stretched until they finally break.

The specifications provide for either a premoulded or a poured joint. The poured joint is worthy of special consideration and has been used in New York State with marked success. It is formed by placing a metal-capped core of corrugated paper board set with metal pins where the joint is to be located. After the concrete has been deposited on both sides of the joint and is stiff enough to edge, the metal cap is raised and the joint edged. When the concrete is hardened, the paper is pulled and the joint poured then or at a later time. It has the advantage of insuring a full depth of joint, of being straight, of insuring a smooth surface, of being water-proof, of being more easily and rapidly constructed than a bulkhead joint, and of

giving full expansion for the thickness of the joint.

New York

The typical slab in New York State has a thickness of 8-7-8 inches, a longitudinal butt joint, no tie-bars, ½-inch transverse joints every 40 feet with no dowels. The reinforcement is placed 2 inches below the surface, using 48 pounds of bars or 40 pounds of mesh per 100 square feet of surface, in addition to three deformed edge bars, two placed at the top and bottom, 6 inches from the outer edge, and one placed 6 inches from the inner edge. The minimum width is 18 feet, widening to 20 feet wherever the road passes through towns and the local community is willing to finance the additional width. New York is building two other thicknesses beside the one mentioned above, namely 7-6-7 inches, and 9-8-9 inches for light, medium, and heavy traffic. In addition to the edge bar and edge thickness, the slabs are reinforced for corner weakness by a bar across the end of the slab and turned back at an angle of 45 degrees.

It is not possible to state definitely the exact amount of thickness nor the proper amount of steel for a universal standard, because the problem is absolutely indeterminate except when in specific cases some of the variables become known in value and action. A rigid standard to care for the worst condition would be uneconomical for others. A reasonably wide variation in standards is therefore to be expected among the many political subdivisions, and all may be equally effective in producing the ultimate permanent pavement. This discussion has been made on the basis of general principles or theory expressed by highway engineers, rather than on specific values.

ACKNOWLEDGMENT.—From a paper presented at the Convention of the Association of Highway Officials of the North Atlantic States, at Atlantic City, N. J.

A Forward Step Which Many a City Needs

ONE of the greatest factors in bringing the administration of a city up to the highest possible state of efficiency is without doubt the installation of an adequate accounting system—one that will absolutely control every account in all departments of the municipal government, and that will make it impossible for any officer or department head to overstep the bounds of his office.

In a surprisingly large number of our smaller cities the old-time single-entry method of bookkeeping is still in use, and until this system is abolished in favor of modern accounting methods, the taxpayer cannot receive the efficient administration of his city's affairs to which he is entitled. Few people of the present day will purchase stock in a private corporation of whose financial condition practically nothing is known, yet this is the procedure of the taxpayer who buys property in a city which is administered without adequate accounting control. He becomes a stockholder in a corporation which operates in the dark.

The installation of an advanced system will of necessity raise the standard of ability required of those appointed to carry on the work of the accounting department, and a demand for higher salaries for these employees will no doubt follow. But the resulting higher efficiency will make possible savings that will more than counterbalance what at first may appear to be an increased expenditure. It should also be considered that industrial and commercial concerns seeking new locations are more likely to give preference to a city which can, through its up-to-date accounting system, make known its exact financial condition, than to a municipality which offers a report based upon guesswork rather than knowledge of the cost of its operations.

E. L. BARNES
City Clerk.

San Francisco's Five-Cent Fare

ATTENTION has been called by L. C. Willems of the San Francisco Chamber of Commerce to an apparent error in the issue of THE AMERICAN CITY for July, 1925, page 28, in the article "Three Years of Municipal Railway Operation in Detroit." He quotes from the article as follows:

> "Average fare under municipal ownership in Detroit is 6.10 cents. It is found that the average fare in Detroit is less than the average fare paid in Chicago, St. Louis, Boston, San Francisco, Milwaukee, Kansas City, Washington, Cincinnati, Denver and in New Jersey."

He then says:

> "This is a gross misstatement. The fact is that streetcar fare in San Francisco has always been 5 cents, there has never been any question to it, and there is no charge for transfers. We believe that a correction should be inserted in your next issue."

San Francisco may justly be proud of its 5-cent fare. That, however, is not the point at issue. The quotation from the article in THE AMERICAN CITY was evidently open to the interpretation Mr. Willems put upon it. The average to which reference was made, however, was not the average fare in *each* of the cities named, but the average of the fares in *all* of them. The average figure of 7.17 cents, with which Detroit's average of 6.10 cents was compared, was used by the Department of Street Railways at Detroit in an official statement. It corresponds very closely with the average fare of 7.27 cents for May, 1925, given by A. S. Richey in his "Conspectus of Indexes," published in the *Electric Railway Journal* once a month and accepted by the electric railway industry as being authoritative. Mr. Richey's figure, however, was apparently for a considerably larger number of cities than the local Detroit management took into account.

Forward Steps in Municipal Affairs

A Comparison of Municipal Salaries

BERKELEY, CALIF.—As an aid in preparing tentative job specifications for many positions and in developing a tentative plan of personnel administration, a comprehensive study of practice in other cities has been made by the undersigned, and by John N. Edy, City Manager of Berkeley, in collaboration with Professor Samuel C. May, Director of the Bureau of Public Personnel Administration, University of California.

Every city in the United States having a population of between 40,000 and 100,000 was mailed a questionnaire which attempted to determine not only the salaries paid, but also the requirements of municipal employments; a determination of the educational qualifications and experience history of employees, and their rating by department heads.

From the replies received a tabulation was prepared, which includes the accompanying list. Neither the maximum nor the minimum salaries were used in securing the averages.

SALARIES IN CITY MANAGER CITIES

Position	No. of Cities Reporting	Salaries Paid—Maximum	Salaries Paid—Minimum	Salaries Paid—Average
City Clerk	15	$4,200	$1,800	$2,961
City Engineer	19	7,200	2,000	3,606
Building Inspector....	17	3,480	1,800	2,601
Plumbing Inspector...	17	2,700	1,500	2,165
City Attorney	19	7,200	2,640	4,065
Electrical Inspector...	11	3,300	1,800	2,000
Supt. of Recreation...	9	4,000	2,000	2,920
Supt. of Parks.....	17	4,000	1,050	2,600
City Treasurer	17	4,500	600	3,037
Purchasing Agent	10	3,600	2,200	2,743
Chief of Fire Dept...	19	4,200	1,920	3,190
Chief of Police Dept..	20	4,200	2,400	2,908
Assessor	10	5,000	2,400	3,385
Milk Inspector	13	2,700	1,320	2,071

SALARIES IN NON-MANAGER CITIES

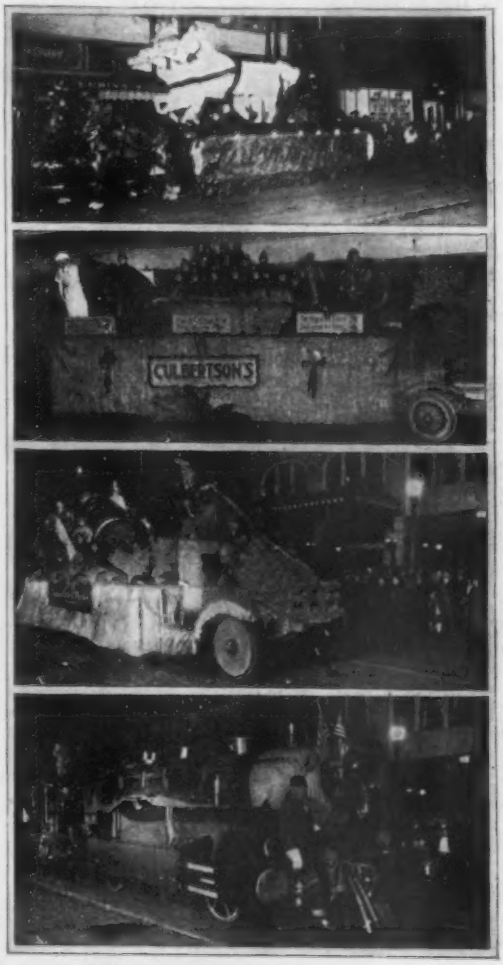
City Clerk	21	$4,500	$1,200	$2,891
City Engineer	25	12,000	2,400	3,995
Building Inspector....	25	3,750	1,800	2,476
Plumbing Inspector...	22	3,200	1,080	2,169
Electrical Inspector...	20	3,600	1,500	2,217
City Attorney	24	5,800	1,600	3,531
Supt. of Playgrounds.	7	4,000	200	2,184
Supt. of Parks.....	13	3,600	1,460	2,492
City Treasurer	21	5,000	500	2,619
Purchasing Agent ...	7	3,500	1,800	2,580
Chief of Fire Dept...	25	5,000	2,220	3,066
Chief of Police Dept..	26	5,000	2,400	3,179
Assessor	17	5,000	1,500	2,614
Milk Inspector	20	3,000	1,200	1,816
Health Officer	25	5,500	960	3,173
Deputy City Clerk...	19	2,500	1,020	1,928
Deputy Assessor	6	2,900	1,500	1,921
Deputy Auditor	10	3,120	1,560	2,240
Deputy Treasurer	8	3,000	1,020	2,034
Master Mechanic	7	3,000	1,721	1,957
Chief Clerk (treasurer)	9	3,000	1,020	2,039
Chief Clerk (health)..	21	3,000	1,200	1,779
Chief Clerk (building)	17	2,100	840	1,476
Chief Clerk (assessor)	9	3,000	1,456	1,731

Averages are not conclusive, but they are indicative, and they are helpful in making comparisons. Also it is recognized that many unknown factors influence salary schedules in effect elsewhere. For "average" pay one may generally expect to receive "average" performances, but that is not true in Berkeley and in some other sections of California. The local availability of talent and exceptional ability does, and probably always will, affect compensation in both public and private business. The age-old law of supply and demand must be recognized.

J. H. JAMISON,
Budgetary Control Officer.

Celebrating Hallowe'en

SPOKANE, WASH.—To local organizations and municipal officials who have in mind staging a community celebration of Hallowe'en this year, the following account of how the people of Spokane get together on this day may offer one or



SOME OF THE FLOATS IN SPOKANE'S HALLOWE'EN PARADE, 1924

two suggestions.

The idea of having a parade in the down-town section of this city on Hallowe'en, in order to keep some of the small boys from indulging in their usual mischievous pranks, was first tried out in 1923 under the auspices of the Spokane Betterment League. This showed such good results that the business men backed a movement to stage the event again on a finer scale in 1924, and the celebration is now recognized as an annual one.

The special committee in charge of the program last year urged those planning to take part in the parade to give emphasis to the quality rather than to the quantity of their exhibits, with the result that the seventy or more floats presented were of an exceptionally fine type and formed one of the most attractive parades ever witnessed in Spokane, although no prizes were offered for the floats.

The celebration of Hallowe'en this year will probably begin with an Indian powwow, at which time it is expected that 10,000 Indians from reservations in the Northwest will be entertained at a barbecue. The following afternoon the special feature will be a football game between the Haskell Indian team and Gonzaga University.

AUGUST WOLF,
Secretary, Publicity-Tourist Bureau, Spokane Chamber of Commerce.

Baltimore's Harbor Development

BALTIMORE, MD.—The accompanying photograph is from a large model by which the people of Baltimore have been enabled to visualize the proposed improvements to the harbor. Of particular interest in this picture are the two projects which are being carried forward as part of the large general development plan for Baltimore. In the lower left portion of the center of the photograph these two projects are shown—one under the name of McComas Terminal, and the other, Patapsco Terminal. Both are being carried forward along the lines laid down in our Port Development Plan drawn in 1922. The McComas Terminal, if completed along the lines shown, will have 8 piers with a total berthing capacity for 32 steamers, and a 2,500-car yard. The Patapsco development will have 5 large piers with a 2,500-foot marginal wharf berthing space for 20 large steamers, and a 4,800-car yard. The work is now being done for the bulkhead foundations for the first two piers of the McComas group, and land is being condemned for the Patapsco group.

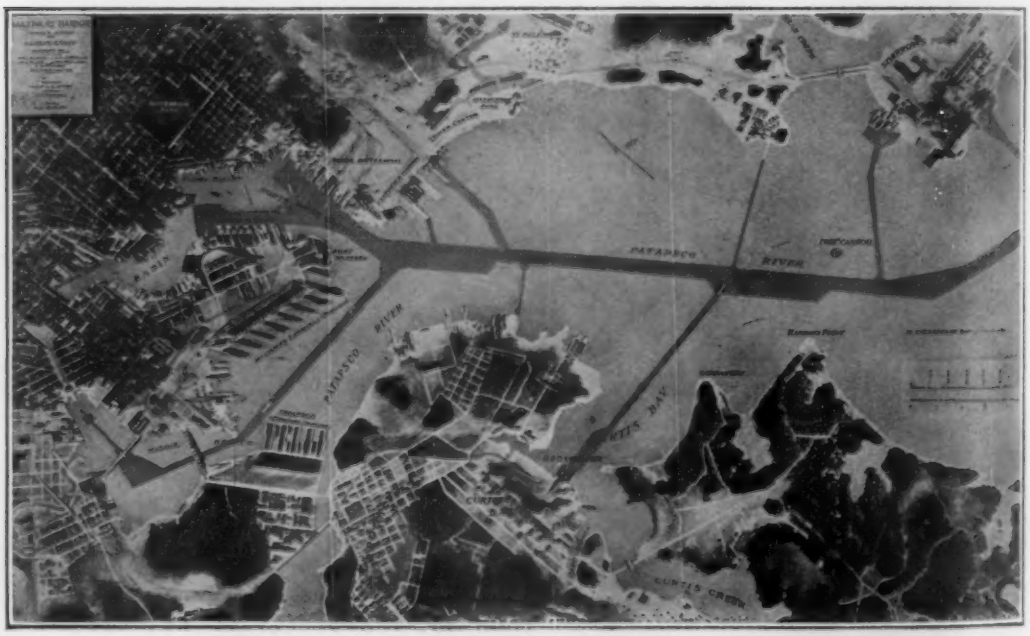
F. W. McKINNEY, Harbor Engineer.

Painted Curbs Indicate Parking Rules

PORTLAND, ME.—Recognizing the need of some simple yet conspicuous way of indicating where and how long automobiles may be parked, Portland has devised a system of coloring the curbs on streets or portions of streets where parking restrictions are in force.

Our traffic regulations provide three kinds of restrictions—no parking, fifteen-minute parking, and one-hour parking. Where no parking is allowed, the curbs are painted black and white; where cars may be parked fifteen minutes, the horizontal and vertical faces of the curbs are painted white; and where one-hour parking is permitted, they are painted orange-yellow. On the black-and-white curbs, both the upper and vertical faces are first painted white and then striped with black every thirty inches on the vertical face only; this symbol is also used at fire hydrants, street-car stops and crosswalks.

A conspicuous sign-board on each arterial route entering the city explains to the incoming automobilist the meaning of the colored curbs; in addition, the usual parking signs are mounted either on electric service poles or individual standards along the streets for the benefit of those unfamiliar with the color scheme.



MODEL OF THE PROPOSED DEVELOPMENT OF BALTIMORE'S HARBOR

A brief digest of the traffic regulations, and a small-size map showing the restricted area, arterial routes in and out of the city and private parking areas, have been published and given wide distribution. Both of these publications clearly explain the curb coloring. That the scheme is proving satisfactory is evidenced by the many favorable comments received from both local and out-of-town motorists, as well as by the fact that the number of infractions of the parking regulations have fallen off materially since the curbs were painted.

H. A. BRINKERHOFF, City Manager.

Progress of Schools in a Utah County

HUNTINGTON, UTAH.—The elementary schools of Emery County, Utah, adopted the consolidation system of administration about twelve years ago. Since then, and as a consequence of that move, education in this district has advanced to a considerable degree towards making available to all children in the county equal educational advantages.

Similarly, high school education has been made much more accessible than heretofore by the recent establishment of such schools in several conveniently located communities throughout the county. Emery County is a rural district, and the more important towns are disadvantageously located in relation to each other for the maintenance of one central school. The county population is small, but by placing part of the burden of high school maintenance upon the enrolled students of each institution, continued supervision directly by the County Superintendent and administration by the School Board were made possible. A basis was arrived at by requiring a certain minimum number of students to be enrolled in each class in the several schools, they to be permitted to carry on high school work under the official direction of the School Board and the Superintendent as long as they complied with the conditions imposed. These comprised chiefly the payment of individual tuition fees, the amount determined for each school by its enrollment the previous year. A committee was officially appointed in each town, known as the High School Committee, to supervise the collection of these tuitions, but they also had free agency in supporting the fund—and incidentally lowering the individual levy—by putting on shows and entertainments of various kinds. The high schools also interchanged performances of their operas and other functions, this feature of the situation being especially commendable, as it has tended to develop a better spirit of inter-community interest, rivalries in the various activities assuming a more friendly aspect, aided by the fact that, in each case, the financial receipts accrued to the local school. By this plan people were given greater inducement to attend the entertainments, for in so doing they were supporting their own school.

This system of high school administration has proved expedient for several years. During the past year, as well as for the coming school season, the County School Board has provided facilities for the transporting of all prospective students from the smaller towns adjacent to each high school. This gives the situation a more centralizing and a more fraternizing effect, and it also brings proportional benefit to each school concerned in a financial way, as the state of Utah provides a $25-per-capita fund for every high school enrollment in addition to the general appropriations for high school support.

A still more specific portrayal of the cooperation that is thus being carried on in Emery County for the sake of education involves two of the towns concerned. One of the four high schools mentioned is located at one of these communities, Castle Dale, the county-seat, but Orangeville, the other town, is but two miles distant, so near that the two cooperate in supporting the one high school. The two communities are represented equally on the High School Committee, and all matters pertaining to the school's operation are of similar concern to both towns. Attendance is almost proportionately divided, and because of the unity thus existing in regard to the mutual interest in their mutual affairs, these two communities style themselves "The Twin Cities."

LAMONT JOHNSON,
Secretary, Huntington Commercial Club.

Public Utility Builds Elaborate Plant for Small Town

By Edward Morris

Chief Engineer, Central Mendocino County Power Company, Willits, Calif.

WHEN the Central Mendocino County Power Company of Willits, Calif., recently acquired a water-storage site on James Creek, southeast of Willits, and purchased the surrounding watershed land, it laid the foundation for a rather elaborate small-town public utility plant, which is rapidly being developed and is already showing its effect in the development of the community. Willits is at the gateway of the historic Redwood Highway in northern California.

A thin arch dam has been designed that will provide increasing storage in the lake site, by the gradual raising of the top of the dam over a period of years as the increase in population exceeds its present capacity. The Morris dam was designed by C. E. Grunksy, consulting engineer, San Francisco, Calif., for an initial elevation of 50 feet. The canyon gorge narrows at the dam site, making it possible to close the canyon with a wall 107 feet long at the crest. The dam has a base thickness of 8.5 feet and tapers to a crest thickness of 2 feet. Reinforced with steel bars at 12-inch intervals and wire mesh in the apron walls, the dam has a tensile strength of 350 pounds. The steel bars are extended above the top of the wall to permit proper bonding with the portion of the dam to be constructed to a greater height at a later date.

VIEW ACROSS TOP OF DAM DURING FLOOD

When the crest of the dam is raised, irrigation water will be impounded. The storage capacity of the lake site at 100 feet height of dam is in excess of 5,000 acre-feet. Following the present design, the dam will require less than 2,500 cubic yards of concrete, as the first 50 feet of dam was put in place with 800 cubic yards of concrete. The record of this amount of cubic content for the excessive amount of storage is unique in water engineering in California. The total cost of the 50-foot structure has been $30,000.

To supply the town of Willits with water, a main 4½ miles long with a total drop of 164 feet is being constructed. This will create excellent fire protection and ample pressure in the mains. A new 14-inch slip joint steel pipe line is now being built to connect the dam with the distribution mains. The steel pipe has a capacity of 1,800 gallons per minute under 64 pounds pressure. Water will be delivered to the mains through a system of gates from the dam a distance of 108 feet north of the main structure with all cast iron pipe construction, and there will be a control of the drain of the reservoir as well as of the feed to the supply line. The natural topography of the ground about the reservoir provides a gravity flow through the power mains to the supply mains, and the alluvial soil throughout the valley makes the cost of pipe laying a minimum. A franchise was obtained by the company some time ago to give the right of way over roads, so that the line will adhere to the open roads. This will offer facilities for maintenance in keeping with the plan of economic operation. A series of back-pressure gates at intervals of

one mile will be used for flushing the system at any time the need arises.

The watershed contributing to the storage site has an annual run-off of over 50,000 acre-feet. With its exceptionally fine natural storage basin behind the dam, Willits is possessed of a water-supply that will create no further annoyance to future generations. It has been demonstrated in every case where water-supply is ample for the community growth, that increase in population and resultant municipal prosperity is assured. The handicap of excessive cost in development in the source of supply and the excessive tax burden which results from difficult water projects has been completely eliminated for the present and future in Willits.

VIEW OF MORRIS DAM FROM DOWN-STREAM DURING DRY-WEATHER FLOW

The Mayor and the Budget in New York City

THE mayoralty is "not the only pebble on the election beach," but is instead only one of 73 home-rule legislative posts to be filled at the coming election in New York City; will have but three of 16 votes in appropriating a half-billion dollars next year; will have no more legal voice than a voter in spending two-thirds the annual budget for operating the city and county governments; will have no control over auditing and finally paying over $400,000,000 for running erpenses and another $100,000,000 for permanent improvements. These facts about the mayoralty are cited in "No Matter Who's Elected," No. 6, by the Institute for Public Service, of which Wm. H. Allen is director, as a reason why voters should not permit the mayoralty to monopolize their pre-nomination interests:

"Public welfare is bound to suffer if voters fail to distinguish carefully between work done by independently elected officers or boards not subject to the Mayor's direction and work done by the Mayor's own appointees subject to his removal.

"It is appalling that a city which struggled so long for home rule should approach this coming election with so little definite discussion as to what voters and political leaders think other home rule officers than the Mayor should do, undo, and refuse to do. In our home rule legislature, which makes constant running to Albany unnecessary, the next Mayor will have no vote at all in the lower house, and but three votes out of 16 in the upper house. He alone cannot pass the budget, cannot fix assessments, cannot fix tax rates, cannot make a subway policy. After the Board of Estimate has acted, the Board of Aldermen can prevent home rule laws, can force the light of pitiless publicity upon appropriations, and can reduce them subject to the Mayor's veto.

"In voting the budget, the next Mayor will have but three votes. Every other member of the Board of Estimate will be elected by popular vote and in law will be absolutely independent of the Mayor. Once the budget for next year is voted, the newly elected Mayor will have no more legal power over nearly $300,000,000 of that budget's $400,000,000 than has the individual voter. Borough presidents may spend their allotments without any legal direction or control by the Mayor. Trustees of the New York Public Library, Metropolitan Museum, Zoological and Botanical Gardens and corresponding private foundations in other boroughs than Manhattan spend their city appropriations without responsibility to the Mayor. So can City College and Hunter College. Bellevue Hospital's Board, although named one at a time by the Mayor, can spend its $3,000,000, just as private charitable institutions can spend their over $7,000,000, without dictation or control by the Mayor. County sheriffs, clerks, district attorneys, registers, surrogates and numerous judges have their own 'spending money' without the slightest legal allegiance to the Mayor. In fact, there will be over 70 separate budget items next year, totaling around $300,000,000, which will be spent well or badly with no more accountability to the next Mayor than to the candidates he defeats. Even the Board of Education, whose members can be removed only for cause, will be legally as independent of the Mayor as is any voter, in spending its $103- to $110,000,000 for current oeration."

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Chamber of Commerce Activities in Public Affairs

Fire Prevention Bureau Organized; Special Fire Equipment Bond Issue Carried

HUNTINGTON, W. VA.—Through the organization in April last of a permanent Fire Prevention Bureau of the Chamber of Commerce, followed by the passage of bonds totaling $215,000 for fire-fighting purposes, the city of Huntington has expressed its determination to decrease its annual fire loss, which had increased to an alarming extent during recent years.

Speaking before a meeting of the Huntington Real Estate Board in the early part of this year, Percy Bugbee, Field Secretary of the National Fire Protection Association, made a strong plea for wider cooperation in this city in extending fire prevention work, pointing out that not only was the equipment of the Fire Department totally inadequate to meet the present needs of the city, but the Department needed, too, the firmer backing of the public and its position strengthened by the enactment of city ordinances aiming to eliminate fire hazards. Acting on a proposal made at that meeting, the Fire Prevention Bureau as a subsidiary of the Chamber of Commerce was formed. Its membership of about twenty-five is made up of representatives of all local civic organizations, together with Fire Chief Burks; and John E. Norvell, representing the Chamber, is serving as Chairman.

Among the several committees appointed by the Bureau to study and report on the various phases of the fire loss situation, was a Committee on Fire Stations and Equipment. Satisfying itself through investigations that this city's fire-fighting facilities were, as had been reported, totally inadequate for a city of 90,000 population, the Committee proceeded to make a comparison of conditions here with those existing in three other important cities of this state. A study of the data received through a questionnaire submitted to the fire chiefs of those cities, showed that while Huntington was larger in population and in area, it had less fire-fighting apparatus, fewer stations, and a smaller Fire Department personnel than any of the other cities.

In a written report of its findings, the Committee stated specifically the procedure it believed necessary in order adequately to protect this city in case of fire. It recommended the installation of a modern fire-alarm system, and the purchase of four pumpers, one service truck, and 10,000 feet of new hose, at an estimated cost of $175,000, in addition to the erection of two new fire-stations for which $40,000 was already provided in a proposed bond issue for general improvements to be put before the voters at the general city election in May this year. These recommendations were approved by the Bureau, and the Committee was instructed to study ways and means for carrying out the proposed program of improvements.

Finding that to secure the additional funds by a direct tax would be impracticable, the Committee recommended a special fire equipment bond issue extending over a period of ten years, and the enactment of an ordinance providing for a vote on this issue at the general election was subsequently secured through the efforts of the Bureau. From then until election day the Bureau's committee on publicity kept the subject continuously before the people through newspaper articles, with the result that the bonds carried with a large majority.

E. S. ALESHIRE,
Chairman, Committee on Fire-Stations and Equipment.

Municipal Swimming Pool Without Taxation

SIOUX CITY, IOWA.—While the need of a swimming pool for Sioux City had been under discussion for several years, the question of providing funds for the enterprise remained a stumbling block, it being generally agreed that to finance the construction of a municipal pool in this city by taxation would be unwise. In the spring of this year, however, the Junior Chamber of Commerce, in cooperation with the Parks Department, worked out a plan that has successfully surmounted the difficulty.

A site for the proposed pool was secured without cost, permission being secured for the use of a plot for that purpose in Riverside Park, recently purchased by the city. Then a contractor was found who agreed to finance the construction of the pool provided an advance sale of admission tickets amounting to $7,500 could be achieved, the proceeds of this sale to be turned over to him. The balance of the estimated cost of $30,000, it was agreed, should be paid from the receipts of the pool during the first few years of its operation, a percentage being set aside for maintenance.

With these terms settled, the Junior Chamber concentrated its efforts on the sale of tickets, the newspapers cooperating by giving publicity to the plan. Admission prices were fixed at 10 cents for children and 20 cents for adults, and tickets worth $1.20 at these rates were sold for $1. Tickets were mailed to about 15,000 people in the city, with the request that the recipients return the tickets or payment for them in the envelopes enclosed for that purpose. As this plan was not put into operation until late in the season, the contractor showed his faith in its success by starting work on the pool after $2,000 worth of tickets were sold. The pool was formally opened, with a large public attendance, on July 4, and judging by the way in which it was patronized in the

short season that followed, it seems certain that the enterprise will pay for itself in the next three years.

The pool, which was designed by L. J. Hintgen, City Engineer of Sioux City, is 240 feet long and 140 feet wide, and holds 800,000 gallons of water. The purity of the water at all times is assured by the installation of a sand and gravel filter with a pump attached, which turns over and purifies the water at the rate of 700 gallons a minute. The filtered water also is treated with chlorine before reentering the pool. From a 1-inch by-pass of the city water-supply main, a small stream of water flows into the pool continuously. The scum gutter, which runs almost entirely around the pool, has an outlet every 25 feet to the main sewer.

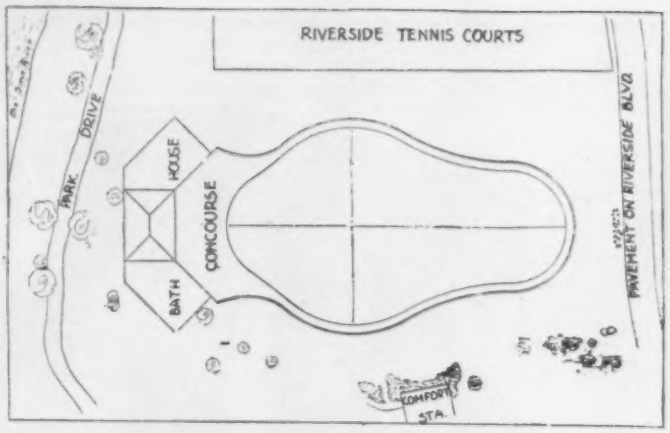


DIAGRAM SHOWING OUTLINE AND LOCATION OF THE MUNICIPAL SWIMMING POOL AT SIOUX CITY, IOWA

As may be seen by the accompanying diagram, the pool is built somewhat in the shape of a shoe-sole. Its depth varies from 3 to 10 feet, with a step up to warn bathers of the change to deeper water. Spring-boards are placed at intervals around the deeper end. There are separate bath-houses for men and women, with sixteen showers in all. Clothes are checked in baskets, this system requiring the minimum amount of space.

Although the present admission prices are unusually low, they will be reduced still further when the building debt has been paid off. Encouraged by the success so far of this plan of financing, the city is planning the construction of additional swimming pools on the same basis.

JOHN D. ADAMS,
Assistant Secretary, Sioux City Junior Chamber of Commerce.

A Poinsettia Festival

VENTURA, CALIF.—For the first time in this city, the poinsettia, which blooms so luxuriantly here throughout almost the entire winter, was made the subject of a celebration on Thanksgiving Day last. The idea of holding this festival for Ventura's favorite flower orginated with the Merchants' Committee of the local Chamber of Commerce.

A Queen was chosen to preside over the day's celebration, and her car led the brilliant floral parade that started at ten o'clock in the morning. The photograph here reproduced shows one of the many attractively decorated cars entered in the parade. Almost all the floats were decorated with poinsettias, a few participants having chosen to vary the color scheme somewhat by the use of other flowers.

Following the parade, a community Thanksgiving service was held at the American theater. This service consisted principally of a community sing and an address. The Queen and her two maids were the guests of the Festival Committee at a Thanksgiving dinner during the noon hour, and they then took seats of honor at a baseball game on the beach at Bathhouse Ball Park, where a fast game was played between the Ventura merchants' team and a team composed of members of the Eastern Star order. The celebration closed with a Poinsettia Ball in the evening.

This first Poinsettia Festival was enthusiastically welcomed by the people of the community, and it is planned to repeat the celebration annually.

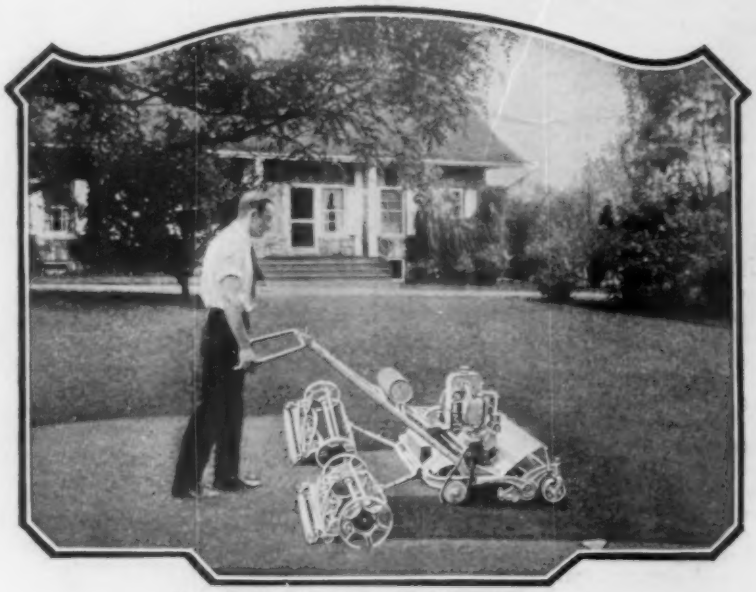
E. E. WIKER,
Secretary, Ventura Chamber of Commerce.

ONE OF THE ENTRIES IN THE FIRST POINSETTIA PARADE IN VENTURA, CALIF., LAST THANKSGIVING DAY

Equalization of Taxes

NORWICH., CONN.—During the last three years the Chamber of Commerce has been active in bringing about a revaluation and equalization of the tax rate in the town and city of Norwich. The last revaluation was made prior to 1880, and as a consequence the system and its method of assessing property were in a deplorable condition.

The first step taken by the Chamber was to secure an adequate tax map of the city and town. The sum of $20,000 has been appropriated by the town in three years to cover the cost of preparing this tax map, which was made by a local firm of engineers. The map covers the



Coldwell Model "L" Motor Lawn Mower and Roller, showing Detachable Gang Units

Extra Detachable Units

More Than Double Cutting Capacity--

At Half the Time, Labor and Expense

A minute is ample time for the operator to attach or detach these extra gang units. They work on a ball and socket swivel, allowing the necessary flexibility to readily follow the contour of the ground. Attached, they increase the cutting width of the **Coldwell Model "L" Motor Lawn Mower and Roller** from 25 to 60 inches. More than double the cut at just half the labor, expense and time.

With one Model "L" and extra gang units, one man can mow and roll from 8 to 10 acres a day. Low in initial cost, the Model "L" completes a maximum amount of work at a minimum of expense. Thousands operating successfully on parks, cemeteries, school and public grounds throughout the United States and Canada. Eighteen Model "L" Mowers on Denver City Parks alone. We shall be pleased to have our nearest distributor demonstrate the Model "L", with detachable gang units. Detailed literature will also be sent upon request.

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319 South West 5th St.,
DES MOINES, IOWA.

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COLDWELL LAWN MOWER CO., NEWBURGH, N. Y., U. S. A.

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thickly inhabited portions of the town and the entire area of the city, but does not cover the rural sections. A further appropriation will be requested at the next annual town meeting to cover the rural sections.

The tax map having been secured, the next step was to devise ways and means for the development of an equitable system for assessing property. A special town meeting was called and a committee of fifteen citizens was authorized to study this phase of the problem, and to make recommendations to the citizens as to the proper procedure. This committee of fifteen held numerous committee meetings, attended by representatives of a number of appraisal companies, and finally recommended that the revaluation should be accomplished by the assessors with what assistance they would need. An appropriation was voted the assessors for securing this information. They were also empowered to employ a permanent clerk in the office, so that they could give more time to valuing property. The citizens committee also recommended a permanent increase in salary in order that the assessors might give their entire time to the work of securing an equitable tax assessment system.

During the three years of activity on this question, a number of Chamber of Commerce meetings were held, addressed by men familiar with assessment matters. A great deal of newspaper publicity was also put forth, and the necessity for equalizing the taxes was constantly put before the public mind in our monthly bulletin. Our assessors are now preparing to perform their task of instituting an equitable method of assessing property and also to revalue all the property situated within the city and town limits of Norwich.

JOHN J. O'ROURKE,
Secretary.

New Things a Board of Trade Could Do

Many Communities Have Too Many Stores and Newspapers

By Emerson P. Harris
Author, *The Community Newspaper*

BLIND faith in competition covers a multitude of sins. The Board of Trade generally urges people to buy at home, but does not concern itself with the question whether the local dealers deserve the trade. It is often true that there are too many stores in town in each line of goods to make it possible to carry good stock, give good service, or make attractive prices. And yet the Board of Trade often welcomes new merchants regardless of the need for them.

Would it not be better for the Board to find ways to reduce the stores to the number needed and discourage such new competitors as could only increase the number of overhead expenses to be met by consumers?

The writer knows of a village where there are three hardware stores when there should be but one. There is no doubt that the people would be better served and at lower prices if the three stores would consolidate. There would then be enough business to justify a good assortment and moderate prices, and there is little doubt that the competition of neighboring towns, the fear of new stores, and an encouraging word from the Board of Trade, would result in the right kind of hardware distribution.

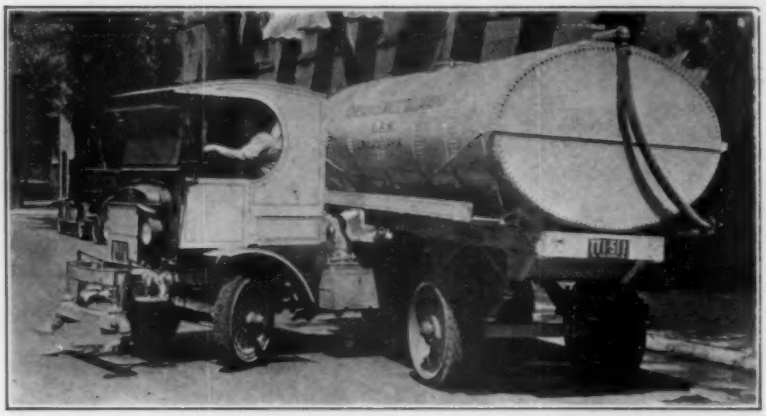
Another city of some hundreds of thousands has two or three times the number of dealers in all lines that are needed to properly serve the people, and practically no stores in the city which are as good as the population and purchasing power of the community should justify.

The trouble is that we assume that the power of competition will assure that the consumer is well served and protected and that the welfare of the town is promoted. A careful survey will reveal the fact that this is not so, and that excessive competition is a great hindrance to the growth of the town. The dealer cannot lift himself by his bootstraps nor eliminate overhead expense on a small turnover.

The same is often true with reference to the local paper. There are many towns where if the Board of Trade could bring about consolidations of local papers to insure that one paper should thoroughly cover the field and serve and prosper where two or three have weakly struggled, a great gain for all concerned would result.

What the writer is urging is that the Board of Trade begin farther back by so arranging and balancing the business of the town that adequate service could be rendered at the right prices with good promise of profit to all. The future results of such a policy would be far more satisfactory.

City of Philadelphia Buys 40 More Autocars



One of the forty 4-cylinder 5-ton Autocars just purchased by the City of Philadelphia. Ten of these trucks are used as tractors with the equipment illustrated above; and thirty are equipped with combination ash and rubbish dump bodies.

The Bureau of Street Cleaning of the City of Philadelphia has a country-wide reputation for progressiveness and efficiency. Scarcely a day goes by on which the Bureau does not receive requests from other cities for information as to how its work is carried on.

The recent purchase of a fleet of forty 4-cylinder Autocars should, therefore, be significant to any municipal official. Philadelphia's Bureau of Street Cleaning has used Autocars ever since it was established as a municipal department, and this order for 40 Autocars is conclusive proof of the excellent performance of Autocars.

Practically every department of the City of Philadelphia is saving expenses with Autocars, and a fleet of 86 Autocars is now owned by the city.

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EITHER OR BOTH - AS YOUR WORK REQUIRES

Gas Lighting Rates, New York State

THROUGH the courtesy of the Public Service Commission of the State of New York, with headquarters at Albany, THE AMERICAN CITY is enabled to publish the following statements showing for each city and incorporated village in the state the maximum gross rates for residential lighting by gas contained in schedules in effect July 1, 1925. Similar data relative to electric lighting rates, secured from the same source, appeared in our September, 1925, issue.

In most instances these rates apply for a specified quantity consumed per month with lower rates for quantities used in excess thereof. Discounts for prompt payment and penalties for delayed payment are disregarded.

Maximum Gross Rates for Residential Lighting per Thousand Cubic Feet

Addison	$ .95n
Akron	.75n
Albany	1.20
Albion	3.15
Alden	.75n
Alexander	.75n
Alfred	.53n*
Allegany	.67n
Almond	.53n
Amityville	1.75
Amsterdam	1.80*
Andover	.53n*
Angelica	.60
Angola	.65m*‡
Ardsley	Note 21
Attica	.75n
Auburn	Note 32
Avon	.80n
Babylon	1.75
Baldwinsville	.75n
Batavia	.75n
†Bath	2.00a*
Beacon	2.10
Bellport	Note 25
Belmont	.60
Bergen	1.25n
Binghamton	1.25
Blasdell	.65m*‡
Bolivar	.60n
Bolivar	.53n*
Briarcliff Manor	Note 15‡
Brightwaters	1.75
Brockport	Note 7
Brocton	.60n*
Bronxville	Note 21
Buffalo	.65m*‡
Buffalo	.70n
Caledonia	1.25n*
Canandaigua	Note 30
Canastota	Note 29
Canisteo	.53n
Catskill	2.70
Cattaraugus	.65m*‡
Cayuga	Note 19
Cayuga Hts	1.82
Cedarhurst	1.30*
Churchville	1.25n
Clifton Springs	Note 32
Cohoes	1.80
Corfu	.75n
Corning	1.95
Corning	.93
Cortland	2.45
Cuba	.53n*
Dansville	1.00n
Depew	.65m*‡
Dobbs Ferry	Note 21
Dunkirk	.60n*
East Aurora	.65m*‡
E. Bloomfield	.85n
E. Hampton	2.00*
E. Rochester	1.00
E. Rockaway	1.30*
E. Syracuse	2.25
Eastwood	1.13
Eastwood	2.25
Elmira	1.05m
Elmsford	Note 21
Fairport	1.00
Falconer	.75n*
Farmingdale	1.75
Farnham	.60n*
Fleischmanns	25.00
Floral Park	1.95*
Forestville	.60n*
Ft. Edward	2.15
Ft. Plain	2.00
Frankfort	1.45
Fredonia	.60n*
Freeport	2.05*
Friendship	.60n*
Fulton	Note 26
Garden City	2.05*
Geneseo	2.80
Geneva	Note 32
Glen Cove	Note 31
Glens Falls	2.15
Gloversville	Note 24
Goshen	2.00
Gowanda	.42n*
Grand-View-on-Hudson	2.30
Granville	Note 8
Great Neck	1.95*
Great Neck Estates	1.95*
Green Island	1.20
Hamburg	.65m*‡
Hastings	Note 31
Haverstraw	Note 11
Hempstead	2.05*
Herkimer	Note 23
Holcomb	.85n
Homer	2.45
Honeoye Falls	.85n
Hornell	.53n
Hudson	Note 6
Hudson Falls	2.15
Ilion	Note 23
Irvington	Note 21
Ithaca	1.82
Jamestown	.75n*
Johnson City	1.25
Johnstown	Note 24
†Kenmore	1.20*
Kensington	1.95*
Kingston	Note 9
Lackawanna	.65m*‡
Lacona	.75n
Lancaster	.55n
Lancaster	.65m*‡
Lawrence	1.30*
Leicester	.80n
LeRoy	.80n
Lima	.85n
Little Falls	Note 23
Little Valley	.65m*‡
Lockport	1.90
Long Beach	2.25*
Lynbrook	1.30*
Lyons	Note 18
Malone	Note 12
Malverne	1.30*
Mamaroneck	Note 21
Margaretville	2.50g*
Mayville	.60n*
Mechanicville	Note 28
Middletown	1.95
Mineola	2.05*
Mohawk	Note 23
Montour Falls	1.00n
Mount Morris	.80n
Mt. Vernon	Note 20
Naples	1.00n*
Newark	Note 32
Newburgh	Note 13
New Hartford	1.45
New Rochelle	Note 22
New York	Note 34
Niagara Falls	2.45*
Nichols	20.00a
North Collins	.57n
North Pelham	Note 20
No. Tarrytown	Note 21
N. Tonawanda	Note 14
Norwich	2.05
Nyack	2.30
Ogdensburg	2.25
Olean	.60n
Olean	.67n
Oneida	2.15
Oneonta	2.05
Orchard Park	.65m*‡
Ossining	Note 15
Oswego	Note 27
Owego	Note 16
Palmyra	Note 18
Patchogue	Note 25
Peekskill	Note 17
Pelham	Note 20
Pelham Manor	Note 20
Penn Yan	Note 10
Perry	.80n
Phelps	Note 32
Piermont	2.30
Pittsford	1.00
Plandome	1.95*
Plattsburgh	2.10
Pleasantville	Note 32
Port Chester	Note 21
Pt. Dickinson	1.25
Port Jervis	1.95
Portville	.60n
Poughkeepsie	Note 13
Pulaski	1.00n
Rensselaer	Note 6
Richburg	.53n*
Richburg	.50n*
Rochester	1.00
Rockville Center	2.05*
Rome	1.65
Rushville	.50n
Rye	Note 21
Sag Harbor	2.80
Salamanca	.65m*‡
Sandy Creek	.75n
Saranac Lake	3.15
Saratoga Springs	1.80
Saugerties	2.10
Scarsdale	Notes 21, 22
Schenectady	1.40
Scotia	1.40
Scottsville	1.25n*
Sea Cliff	Note 31
Seneca Falls	Note 32
Silver Creek	.60n*
Solvay	1.13
Southampton	2.80
So. Corning	.81n
So. Glens Falls	2.15
So. Nyack	2.30
Springville	.65m*‡
Suffern	2.00
Syracuse	1.13
Tarrytown	Note 21
Tonawanda	Note 14
†Troy	1.30*
Tuckahoe	Note 21
Upper Nyack	2.30
Utica	1.45
Warsaw	.80n
Waterford	1.30*
Waterloo	Note 32
Watertown	1.95
Watervliet	1.20
Watkins	1.00n
Waverly	1.95
Wellsville	.53n*
Westfield	.60n*
W. Haverstraw	Note 11
White Plains	Note 21
Whitesboro	1.45
Williamsville	.65m*‡
Windsor	2.00g*
Woodsburg	1.30*
Yonkers	Notes 20, 33
Yorkville	1.45

EXPLANATION OF REFERENCE MARKS

"a" denotes acetylene gas.
"g" denotes gasoline gas.
"m" denotes mixed natural and manufactured gas.
"n" denotes natural gas.
"†" denotes that service is furnished by the municipality. In all other cases service is by a public utility corporation.
"‡" denotes that rate is subject to an increase or decrease in accordance with variations in the cost of coal to the corporation above or below a fixed base price.
*A minimum monthly charge applies in all cases except where asterisk (*) is shown in connection with the rate; such reference mark denotes that a minimum monthly charge does not apply.

NOTE 6: Nothing to 300 c. f., $1. Next 700 c. f., 16c per C c. f. Minimum charge, $1 per month.
NOTE 7: First 100 c. f., 95c. Each 100 c. f. thereafter, 21c. Minimum charge 95c per month.
NOTE 8: First 100 c. f., $1. Excess over 100 c. f., 25c per C c. f. Minimum charge, 75c per month.
NOTE 9: First 100 c. f., 57c. For next 4,900 c. f., $1.60 per M c. f. Minimum charge, 50c per month per customer.
NOTE 10: For first 100 c. f. or less, 75c. For all in excess of 100 c. f. up to 20,000 c. f., 19c per C c. f. Minimum charge, 75c per month.
NOTE 11: First 100 c. f., $1.25. Next 300 c. f., 25c per C c. f. Next 19,600 c. f., 22c per C c. f. Minimum charge, $1 per month.
NOTE 12: First 100 c. f., 50c. Next 2,000 c. f., 25c per C c. f. Minimum charge, 50c per month.
NOTE 13: First 100 c. f., 50c. Next 4,900 c. f., $1.45 per M c. f. Minimum charge, 50c per month.
NOTE 14: First 100 c. f., $1.12 (coke oven gas). Each succeeding 100 c. f., 12c. Minimum charge, $1 per month per meter.
NOTE 15:* First 100 c. f., per month, 75c. Next 100,000 c. f., $2.00 per M c. f.
NOTE 16: First 100 c. f., 70c. Next 14,900 c. f., 20c per C c. f. Minimum charge, 50c per meter per month.

A great fleet of rugged White Trucks clear New York City streets following snow fall.

Whites Keep Snow-bound Roads and Streets Open

TENS of millions of dollars are lost annually in cities, counties and states when snowfall ties up traffic. Much more was lost before motor trucks were applied to snow removal — a task to which White Trucks are specially fitted because of their reserve power, ruggedness, stamina and dependability. Thousands of Whites are employed in snow removal.

There is no type of snow removal work to which White Trucks are not suited. They have the power to push plows through the heaviest snowfalls. White Dump Trucks with low sides make loading easy and the ease with which the dump body is raised and lowered makes that operation speedy and clean in snow removal.

The great fleet of 857 Whites owned by the City of New York have, time after time, for many winters demonstrated how well White Trucks can handle the snow problem.

You need the truck with the stamina to rout the snow peril and keep your city streets open for traffic.

Write for Literature on White Trucks in Municipal Service.

THE WHITE COMPANY, Cleveland

WHITE TRUCKS

MADE RIGHT — SOLD RIGHT — KEPT RIGHT

NOTE 17:* First 100 c. f. per month, 75c. Next 100,000 c. f., $1.80 per M c. f. Next 200,000 c. f., $1.75 per M c. f.
NOTE 18: First 100 c. f., 63c. Over 100 c. f., 13c per C c. f. Minimum charge, 50c per meter per month.
NOTE 19: First 100 c. f., 65c. Over 100 c. f., 15c per C c. f. Minimum charge, 50c per meter per month.
NOTE 20:* First 100 c. f. per meter per month, 75c. Next 100,000 c. f., $1.20 per M c. f.
NOTE 21:* First 100 c. f., per meter per month, 74c. Next 100,000 c. f., $1.45 per M c. f.
NOTE 22:* First 100 c. f. per meter per month, 73c. Next 100,000 c. f., $1.30 per M c. f.
NOTE 23: First 100 c. f., 65c. Next 1,900 c. f., $1.45 per M c. f. Minimum charge, 50c per month.
NOTE 24: First 100 c. f., 55c. Next 4,900 c. f., $1.55 per M c. f. Minimum charge, 40c per meter per month.
NOTE 25: First 100 c. f., 75c. Next 300 c. f., 30c per C c. f. Next 600 c. f., 20c per C c. f. Over 1,000 c. f., $1.75 per M c. f. Minimum charge, 75c per meter per month.
NOTE 26: First 300 c. f., or less, $1.10. Next 700 c. f., 26c per C c. f. Minimum charge, $1.10 per meter per month.
NOTE 27: First 300 c. f., $1. Next 700 c. f., 23c per C c. f. Minimum charge, $1 per month.
NOTE 28: First 100 c. f., 60c. All over 100 c. f., $1.53 per M c. f. Minimum charge, 60c per month.
NOTE 29: First 100 c. f., 95c. Next 4,900 c. f., per month, 23c per C c. f. Minimum charge, 75c per month.
NOTE 30: First 100 c. f., 60c net. Next 4,900 c. f., $1.60 per M c. f. net. Next 5,000 c. f., $1.40 per M c. f., net. Excess over 10,000 c. f., $1.30 per M c. f., net. Minimum charge, 60c per month, net.
NOTE 31: First 100 c. f., 75c. Next 300 c. f., 26c per C c. f. Next 600 c. f., 21c per C c. f. All over 1,000 c. f., $2 per M c. f. Minimum charge, 75c per month per meter.
NOTE 32: For first 100 c. f., 50c. Next 19,900 c. f., 13½c per C c. f. Next 80,000 c. f., 9c per C c. f. Next 900,000 c. f., 8½c per C c. f. Next 1,000,000 c. f., 8c per C c. f. Over 2,000,000 c. f., 7½c per C c. f. Minimum charge, 50c per meter per month.
NOTE 33:* First 100 c. f. per meter per month, 80c per C c. f. Next 100,000 c. f. per meter per month, $1.95 per M c. f. Next 200,000 c. f. per meter per month, $1.90 per M c. f.
NOTE 34: Covers various services, maximum gross ranging from $1.15* to $1.45* per M c. f.

Kansas City to Have a Trafficways Commission

THE Public Service Institute, of Kansas City, Mo., calls attention to an important provision of the recently adopted city manager charter, the first election under which is to be held in November, 1925. There is to be created a Trafficways Commission, to consist of the director of public works, who will be *ex-officio* chairman, the president of the Board of Park Commissioners, and the chairman of the City Plan Commission. The Commission will operate as a division of the Department of Public Works and the director of public works will be the executive officer.

It will be the duty of the Commission to study the traffic needs of the city other than those of purely passenger traffic. The Council may empower the Commission to devise a system of general trafficways and to acquire, construct and maintain any such trafficways in the same manner that the Board of Park Commissioners now acquires, constructs and maintains boulevards. The acquisition or establishment of any trafficway will be subject to approval by the Council.

The Council may levy special taxes on land within park districts, or special benefit districts, for the maintenance, improvement and repair of trafficways, and it may levy a frontage tax on property abutting on such trafficways, for their maintenance. The procedure and amount of levy in each case are governed by the charter provisions for the levy of the park district and frontage assessments. The maximum levy thus is 2½ mills on land only in each district, and ten cents a front foot on abutting property.

The cost of acquisition, construction, or improvement of trafficways may be paid from the general fund, bond funds, or other funds, or from special assessment on land, or from any combination of these.

The Kansas City Public Improvement Association plans to recommend a bond issue for trafficways. If the bonds are voted, the Trafficways Commission will have a large work waiting for it. Studies of needs and routes, estimating costs, and legal proceedings will undoubtedly consume considerable time, and few, if any, of the bonds would probably be used in the first year.

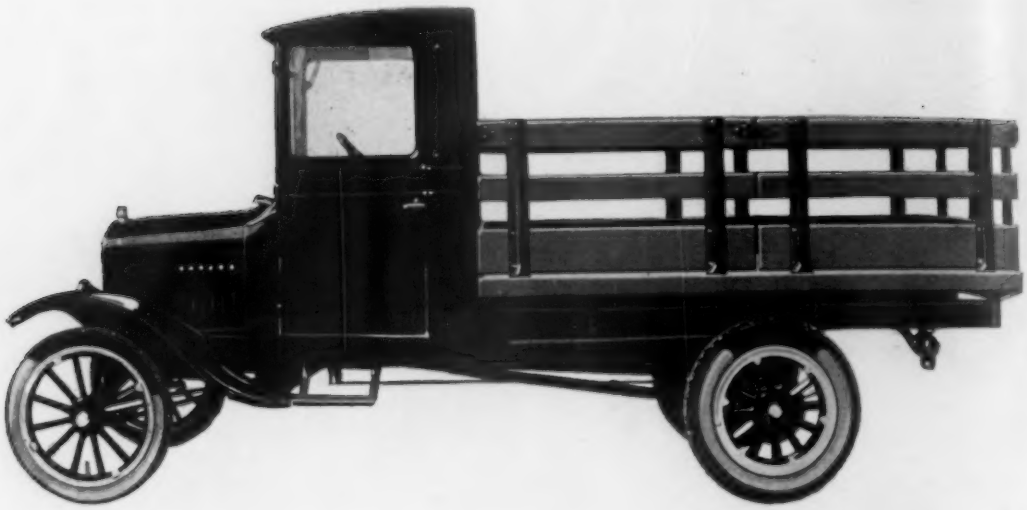
The Trafficways Commission plan is a special effort to solve a big problem in a special way. It should result in an adequate system.

New Health Legislation of Special Importance

A REVIEW of 1925 health legislation in 25 states, by James A. Tobey, LL.B., was an important feature of the August number of the *American Journal of Public Health*. The following paragraphs are from the author's summary:

Subjects Included.—The largest number of new health measures were concerned with food, as nine states passed fifteen such laws. Municipal health legislation of general scope, and not including purely local acts came next. There were fourteen such measures in six states, though eight of them were in New York. Tuberculosis got attention in six states, which passed thirteen laws on this subject. Nine new vital-statistics measures were enacted in eight states. County health received recognition by seven measures in five states, and communicable-disease control had new measures in the same number of states. Maternity legislation was also passed in five states. Other subjects were scattering. It is interesting to note how little venereal-disease and child-hygiene legislation there was, as compared to former years.

Topics of Special Interest.—Legislation regarding shell-fish pollution was passed in Massachusetts, New York, and New Jersey. Bills to control lye and other caustic substances were successful in Minnesota, New Hampshire and Vermont. New sterilization acts were passed in Idaho and Minnesota, while the existing law in Oregon was amended. Other bills on this subject were introduced in Colorado, Illinois, Maine, New Jersey, Ohio and Rhode Island; but apparently were not successful. Public health nursing came in for attention in four states: Kansas, Minnesota, Michigan and New York. A law regulating salt used in the prevention of goiter was passed in Wyoming. Ohio passed a comprehensive amendment to its stream-pollution law. Massachusetts authorized a state investigation of the prevalence of cancer.



Look Ahead!

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Just ahead lies winter. Soon will come rain, snow, ice and bitter cold—factors which will affect your delivery service.

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The man who uses a Ford truck to meet these conditions has a decided advantage in securing rapid and sure transportation. The starter gives a quick turnover to the engine despite the cold; the absence of excess weight reduces skidding to a minimum; parking is simple and operation is dependable.

Look ahead now and be prepared. See your nearest Authorized Ford Dealer and plan now to put your transportation system on a Ford basis thereby continuing first class delivery service throughout the winter.

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The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

Scope of City's Power to Prevent Fires

THE courts generally regard the prevention of fires in incorporated towns and cities as a matter for local regulation. It belongs to the ordinary police powers of the city, and, so far as consistent with state legislation, a general grant of police powers to pass ordinances for the welfare of the city includes authority to adopt and enforce reasonable fire regulations. (Cook County vs. Chicago, 142 Northeastern Reporter, 442, decided by the Illinois Supreme Court.)

In the cited case it was decided that a county erecting buildings within the city limits was amenable to municipal fire regulations. The Court said:

"The powers granted to counties under the general law do not include the police power. That power is granted to cities and villages under the act concerning their incorporation, and by that statute it extends to all buildings within its limits. The county is not required to build a court-house within the limits of any city, but may build it elsewhere if directed so to do by the people. . . . When the county builds a court-house within the limits of a city, it may be held that in so doing it acts voluntarily. No good reason, therefore, is perceived why it should not be made amenable to the reasonable police regulations imposed by the city in the interest of the general welfare."

There are other decisions, however, to the effect that municipal fire regulations do not apply to public buildings of other governmental jurisdictions, where there is legislative intimation of intent to withhold from the municipality control over such buildings. (See 31 American Law Reports, 450.)

But, although a city, under its general police power, may adopt reasonable fire prevention ordinances, an ordinance which controls or regulates a common and useful private business or occupation is subject to review in the courts, for a test whether, under the guise of police regulation, there is an unwarranted interference with the constitutional rights of private citizens to pursue lawful occupations. (Harrigan & Reid Company vs. Burton, 195 Northwestern Reporter, 60.)

In the last cited case, the Michigan Supreme Court decided that an ordinance of the city of Detroit, purporting to regulate the installation of heating apparatus in private dwellings, was invalid because requiring heating contractors to give bonds to protect their patrons, and because vesting arbitrary power in licensing authorities. The Court added:

"Another questionable feature of the ordinance, as a measure of fire protection, exercised under the police power, is that the restrictions and burdens it imposes are directed only against 'dwellings,' limited further by especially excepting hotels, club-houses, hospitals, jails, reformatories, and asylums, and also leaves untouched all other kinds of buildings in which heating systems or apparatus of some kind are necessarily installed and used, such as stores, office buildings, restaurants, banks, churches, station houses, factories, shops, etc. If fire protection was the purpose, an ordinance which only imposes the safeguarding regulations on dwellings and leaves free to ignore them all other buildings in the city, wherever located, which with their heating systems are likewise subject to the danger sought to be guarded against, savors strongly of discriminating and unreasonable class legislation."

The courts are not agreed as to the right of a city to station firemen, or other employees, in a theater at the expense of the operator of the theater. Such an ordinance adopted by the city of Mobile was upheld in the case of Tannenbaum vs. Rehm, 44 Southern Reporter, 532, the Alabama Supreme Court saying:

"The duty of protecting the person or citizen from dangers of fire in the exercise of the police power would seem to carry with it the right to employ the most effective means to that end, and this would include the right of designating competent agents or servants for the performance of such duty."

Citing decisions of the Louisiana Supreme Court and of the Maryland Court of Appeals, to the same effect, the Alabama court adds that a municipality may impose the cost of such service upon the manager of the theater, but that "of course such cost or expense must be fair and reasonable."

A similar conclusion was reached by the Connecticut Supreme Court of Errors in the case of Hartford vs. Parsons, 87 Atlantic Reporter, 1182.

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Size for size—and weight for weight—the new Cletrac Model "K" (15–25 H.P) is the greatest tractor value on the market today. For downright dependable performance under all conditions, this rugged, easily handled machine is a revelation. It pulls with ease an 8-foot grader *with full bite*, and its turning radius equals its own length.

Exclusive CLETRAC Developments

Model "K" Cletrac is the only tractor with an instantaneous oiling system. A simple push of the hand plunger oils the lower track wheels perfectly. Crawler tracks are quickly adjusted by "take up" with a regulating screw, giving an absolutely uniform alignment, front and rear. All working motion is eliminated by seven closely assembled track wheels which also cause a maximum of track gripping the ground and a corresponding increase of draw bar pull. All parts easily accessible.

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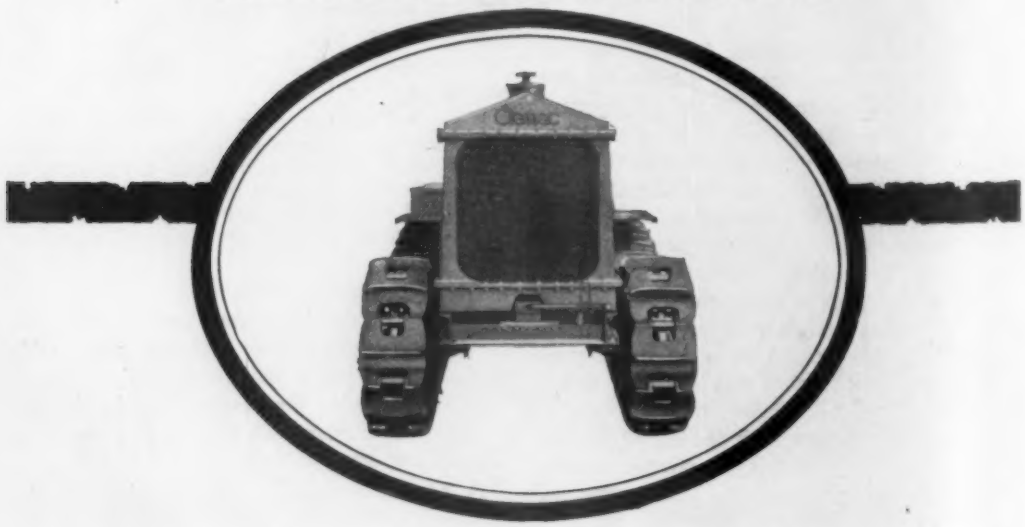

However, in the case of Chicago vs. Weber, 92 Northeastern Reporter, 859, the Illinois Supreme Court took the opposite view, remarking:

"In every building in the city where large numbers of people are employed, or where the public go in crowds, the safety of those in the building would be promoted by having a member of the fire department there, and if the cost of discharging the duty to the public who attend theaters may be charged to the owner, the same requirement may be made of the owner of every other building where the public are invited or attend in numbers. The city has power to establish a fire department, to erect engine houses and provide fire engines and other implements for the prevention and extinguishment of fires, but that duty is a duty to the public. If there is power to charge the expenses of performing that public duty to the owner of a theater, there is also power to do the same thing with respect to other owners, and the members of the fire department could be parceled out and stationed in private buildings, so that practically the whole expense of the fire department would be paid by individuals or corporations. If the city has authority to do that, it could accomplish the same result with policemen, who are in the direct exercise of the police power, and they might be stationed in every building where disorder or violation of the law might occur, and the expense be charged to the owner. That the city cannot perform its duties to the public in that manner is manifest."

A similar conclusion was reached by the Arkansas Supreme Court in the case of Water vs. Leech, 3 Arkansas Supreme Court Reports, 110, decided in 1840.

An ordinance making the storage, etc., of rags dependent upon the unrestrained will of a chief of police was held by the Massachusetts Supreme Judicial Court to be void, in the case of Commonwealth vs. Maletsky, 89 Northeastern Reporter, 245. So, too, an ordinance requiring a special permit for storing boxes, etc., was held by the Minnesota Supreme Court to be invalid as ignoring the quantity, place or manner in which such material might be kept.

But the Indiana Supreme Court sustained the validity of an ordinance forbidding storing more than five tons of straw on one block, unless within a fire-proof structure.

As to more common regulations, a standard legal authority notes:

"The enactment of ordinances establishing fire limits, and forbidding the use of inflammable materials in buildings or in the erection thereof within such limits have been uniformly sustained as proper methods of its exercise. While some courts hold that this power is inherent in a municipality, it nevertheless usually exists only by reason of an express grant or a necessarily implied statutory or constitutional delegation. Such ordinances cannot be retroactive and require the removal of existing buildings from the fire limits, but may prevent removal of forbidden structures into or even within such limits from one lot to another, and may authorize the summary demolition of buildings erected in violation of law. That a wooden structure ceases to be such when encased with iron has been held by some courts, but this view has not been generally accepted." 28 Cyc. 741-743.

Items of Municipal Law

Rights of Paraders in Streets

Members of the public have a right to use the streets of a city for the purpose of parading, subject to reasonable regulatory ordinances applying to all alike, holds the Wisconsin Supreme Court in the recent case of Shields vs. State, 204 Northwestern Reporter, 487.

The Court sustained a conviction of Shields, policeman of Boscobel, who attempted to shoot a Ku Klux Klan parader after Shields was struck while attempting to lift the masks of marchers. There was no local ordinance against the parade and it had been permitted by the Mayor. The Court ruled that the parade did not constitute an unlawful assembly, saying:

"It cannot be doubted that the public demonstrations of this order excite resentment on the part of those classes of our citizens whose Americanism the principles of the order condemn. But experience in our state does not indicate that such resentment, justly entertained, prompts reprisal by acts of violence, or leads to a tumultuous breach of the peace."

School Hours for General Education Should Not Be Shortened to Allow for Religious Instruction

In an opinion which appears to be in line with what the courts have decided generally, Mr. Justice Seeger of the New York Supreme Court lately held that the Mount Vernon Board of Education should be restrained from dismissing pupils 45 minutes early one day each week to receive religious instruction in their churches:

"If it is necessary or advisable that such instruction be given on school days, the day is long enough for that purpose without encroaching on school hours.

"The Education Law, section 620, describes the instruction required in public schools. Religious instruction is not one of them. Consequently, it is unlawful and unauthorized for a board of education to substitute religious instruction in the schools in the place of the instruction required. To permit the children to leave the school during school hours would accomplish the same purposes and would, in effect, substitute religious instruction for the instruction required by law."

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Has need of the economies insured by this equipment.

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For parks, playgrounds, golf grounds, allotments and in contracting and construction work, the Hadfield-Penfield "One Man" Grader will cut the time and costs of earth moving. In back filling and ditching it saves a lot.

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ONE MAN GRADER

The Municipal Bond Market

By Sanders Shanks, Jr.
Editor, *The Bond Buyer*

THE summer of 1925 will be remembered for the total lack of activity which existed in the municipal bond market. During that period of the year when the investor is vacationing, bond houses expect a little dullness, but this summer there was exceptionally little business done. In addition, there were few issues of any importance offered by municipalities. The total of new issues brought out in August was $72,555,211, the smallest monthly total of the year; in fact, the smallest in a couple of years.

Along with rising money rates and a reactionary trend in bonds of all classes, municipal bond prices have dropped off sharply from the level of last spring. For example, Illinois disposed of $10,000,000 4's at a net interest cost of 4.24 per cent per annum, whereas in May a similar loan was placed at 4.01 per cent. About the same time the state of Missouri sold $7,500,000 4½'s at 4.27 per cent. Last June, that state floated an equally large issue at 4.02 per cent. In March, 1925, the state of Pennsylvania sold $20,000,000 4 per cent bonds at a price yielding 3.85 per cent interest. When the officials asked for bids on a like amount of bonds of the same series in September, only $551,000 were subscribed for by a few local bidders. The dealers refused to bid, as they could not take the bonds at par and realize a profit in reselling them.

At the time of this writing, the largest block of bonds to be offered during the latter part of September is a $15,000,000 issue of city of Philadelphia bonds.

The following are some of the important issues sold during September:

Amount	Place	Maturity	Rate (%)	Net Yield (%)
$ 400,000	South Bend, Ind.	1930-39	4½	4.17
10,000,000	Illinois	1945-54	4	4.24
1,000,000	Chicago, Ill., Lincoln Park Dist.	1926-45	4½	4.27
7,500,000	Missouri	1939-42	4¼	4.27
300,000	North Hempstead and Hempstead, N. Y., U. F. S. D. No. 5	1927-86	4½	4.36
500,000	Multnomah Co., Ore.	1931-55	4½	4.39
300,000	Kent Co., Del.	1928-42	4½	4.50
3,000,000	Los Angeles City and High Sch. Dist., Calif.	1925-64	5	4.55
380,000	Coos Co., Ore.	1930-39	4¾	4.71
450,000	Robeson Co., N. C.	1927-33	5	4.81
750,000	High Point, N. C.	1928-55	5	4.84
2,420,000	Allegheny Co., Pa.	1926-55	5	5.00
990,000	Palm Beach Co., Fla., Spec. Rd. & Bridge Dist. No. 11	1930-55	5½	5.12

Chicago at Last Votes to Install Water-Meters

ALMOST at the moment the period of grace allowed Chicago by the War Department had lapsed, the aldermen, by a two to one vote, passed an ordinance providing for universal metering. For over eighteen years John Ericson, City Engineer, has consistently and insistently urged universal metering in Chicago as a means of checking the extravagant waste of water.

The per capita consumption of water in Chicago has reached 275 gallons a day, more than half of which is waste. Aldermen in the past have felt that their political future would be ruined if they voted for meters. "Regardless of what the Federal Government required as a condition for the continued withdrawal of lake water for sewage dilution, the city ought to have metered its water-supply years ago," said the Chicago *Tribune* some time before the politicians found themselves in such a position that they were virtually forced to pass the ordinance for universal metering.

It is understood that enough meters will be installed at once to definitely prove that an abundance of water for domestic uses can be purchased at meter rates at a less price than at present flat rates, thus removing whatever public opposition to metering still remains.

Sanitary Conditions in Wayside Eating Establishments

A NOTICE to local health officers in New York State. by Matthias Nicoll, Jr., State Commissioner of Health, reads:

"The Department is constantly in receipt of reports regarding the insanitary conditions prevailing in many of the thousands of wayside eating establishments and 'hot dog stands' situated principally along the main lines of automobile traffic. Many of the so-called rest rooms in connection with these establishments are also reported to be in a deplorable condition. Obviously, the State Department of Health is not in a position to inspect and supervise these places and must depend upon local health officers for the accomplishment of results. I, therefore, earnestly urge all health officers of towns and villages in whose jurisdiction are one or more wayside eating places and rest rooms largely patronized by automobilists, to make a thorough inspection of these places at frequent intervals. While under the law, town and village boards of health may probably not issue licenses, such boards may adopt reasonable rules and regulations regarding them and enforce the same. In the course of such inspection the following points should be noted:

1. That the drinking water supplied is pure and not subject to contamination.
2. That the milk is of good sanitary quality, kept cool and protected from contamination.

Highway Number 72, Salt Lake City, Utah. Tarvia-built, 1922.

Tarvia Service *Chapter X*

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"GOOD ROADS at any cost" is a doubtful policy. For good roads cease to be a benefit when the expense of building and maintaining them becomes burdensome. Too costly construction slows up the proper development of any good roads program.

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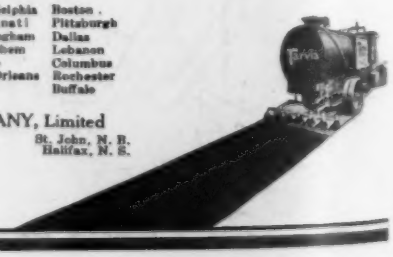

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

3. That meats, including "hot dogs," are kept in ice-boxes.
4. That food is handled and served in a sanitary manner.
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"It may perhaps be advisable for health boards to have printed a small placard to be posted in a conspicuous place, stating that the establishment has been inspected and approved by the health officer.

"This matter is an extremely important one—a potential menace to the health of millions of people throughout the state, not only residents of the state, but visitors, and I earnestly hope that the health officers involved may be counted upon to cooperate with the district state health officers, who will render every possible help in bringing about better sanitary conditions in wayside eating establishments."

Zoning Notes

Prepared by Frank B. Williams

Author of "The Law of City Planning and Zoning"

From data collected by the Zoning Committee of New York (233 Broadway)

Mr. Williams may be addressed in care of THE AMERICAN CITY, 443 Fourth Avenue, New York

Recent Zoning Ordinances and Enabling Acts

CARMEL (1925), SAN LEANDRO (1925), SAN RAFAEL (1924), SANTA BARBARA (1925), and SOUTH SAN FRANCISCO, CALIF.—Ordinances.

COLORADO SPRINGS, COLO.—Ordinance, 1925.

ENFIELD (1925), FAIRFIELD (1925), and NORWICH (1925), CONN.—Ordinances.

ELKHART (1925), EVANSVILLE (1925), and GARY (1925), IND.—Ordinances.

DAVENPORT (1925), and IOWA CITY (1925), IOWA.—Ordinances.

NEW ORLEANS, LA.—Ordinance, 1924.

MASSACHUSETTS.—Laws, 1925, Chs. 116, 130; 219 (Boston).

CHELSEA (1924), NEEDHAM (1925), PAXTON (1924), REVERE (1925), WALPOLE (1925), WELLESLEY (1925), MASS.—Ordinances.

KALAMAZOO (1925) and MUSKEGON (1925), MICH.—Ordinances.

MISSOURI.—Laws, 1925, No. 307 applies to all cities, towns and villages in counties of not less than 50,000 population.

AUDUBON, N. J.—Ordinance, 1925.

LA SALLE (1924), MINEOLA (1921), SENECA FALLS (1925), N. Y.—Ordinances.

NORTH CAROLINA.—Laws, 1925, Ch. * * * * amending 1921, ch. 169 applies to cities and towns in Wayne County.

FARGO, N. DAK.—Ordinance, 1925.

WARREN, OHIO.—Ordinance, 1925.

PENNSYLVANIA.—Laws, 1925, No. 200 amends 1923, p. 54.

ALDEN (1925), BELLEVUE (1925), CHESTER (1925), EDGEWOOD (1925, EMSWORTH (1925), and WEST VIEW (1925), PENN.—Ordinances.

Recent Zoning Decisions

COLORADO.—*Schackelford v. City of Denver, District Court*, reported in *Rocky Mountain News*, July 25, 1925. Certiorari from the decision of the Board of Appeals, granting a permit for the erection of a hospital for consumptives. The plaintiff claimed that the Board of Appeals had no right first to refuse and later to grant the permit, changing its decision without receiving any further evidence. The Court held that the Board had the right to reconsider on the evidence already before it, and sustained the decision of the Board of Appeals.

CONNECTICUT.—*City of Hartford v. Butler and Katz, Superior Court.* In the report in the *Christian Science Monitor* of August 1, 1925, the statement is made that in this case the constitutionality of the state zoning act and of the Hartford zoning ordinances were upheld. The full report of the case is not at hand. It would appear that the defendants applied for a permit to erect a gasoline station in a residential section, and were enjoined from so erecting it. The question of the genuineness of a prior business use of the property was also involved. Apparently, local consents are necessary to certain changes of the use. The judge sustained the ordinance and declined to permit the gasoline station.

LOUISIANA.—*Tyler v. Harmon*, 104 *So. Rep.* 200. An ordinance of the city of New Orleans prohibiting whites and negroes from establishing residences in certain districts without the consent of a certain proportion of those already living there is not violative of the United States or the state Constitution, not being any more race discrimination in civil or political rights than a provision requiring the races to travel in separate railroad cars, etc. It is purely a zoning ordinance, and within the police power of the state.

The Court cites *Plessy v. Ferguson*, 163 *U. S.* 537, as in support of its decision and distinguishes, admittedly with some difficulty, the case of *Buchanan v. Warley*,* 245 *U. S.* 60.

Recent Zoning Literature

Housing Betterment for August calls attention to an eight-page pamphlet entitled "Zoning Technique," issued by the Department of Public Welfare of Massachusetts and written by Edward T. Hartman, the State Consultant on Housing and Planning in that Department. Copies of this pamphlet may be had of Mr. Hartman, at Room 37, State House, Boston.

The *Journal* of the Town Planning Institute of Canada issued October, 1924, contains the text of a proposed zoning by-law for Ottawa.

* For a reference to other cases on the same point, see Williams, "Law of City Planning and Zoning," p. 287.

The Auto and Its Owner Want Snow-Free Streets

The automobile has become more than a mere pleasure vehicle. To many city men and women, it is a business and living necessity.

In addition to this group are the many who utilize the automobile to still greater extent—the doctor, the ambulance, the fire department, the corner grocer, the department store. They must have snow-free streets for lives, health, living. Life, comfort and property are dependent upon them.

Streets can be cleared by hand labor. But, employing fifty, a hundred or more men puts a considerable strain on the appropriation for streets and alleys. And after that money has been spent, the city has nothing tangible to show for it.

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Municipal and Civic Publications

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The Building of Satellite Towns.—By C. B. Purdom. J. M. Dent & Sons, Ltd., London. 1925. XV+368 pp. Fully illustrated. Sold in the United States by G. P. Putnam's Sons, New York. $10.00, covering all charges.

A contribution to the study of town development and regional planning, being a comprehensive and authoritative presentation of the idea of building new towns around existing cities instead of enlarging these cities over the countryside. The conditions that make the problem to which this solution is offered are of importance not only in England but all over the world. It will not serve the purpose to create other slums around those that already exist, therefore the ideal satellite city must be conceived. In England, the garden cities of Letchworth and Welwyn are being built as satellite towns of London. The organization, planning, and financing of these are fully explained in this volume, and the practical problems involved in including such towns in any scheme for regional planning are discussed in such a way as to establish the principles of this method of economic and social progress. The book is unique in its field and of great importance. The plans, views, and statistical tables are valuable features of the exposition.

New Aspects of Politics.—By Charles Edward Merriam, Professor of Political Science, The University of Chicago. The University of Chicago Press, Chicago. 1925. XVII+253 pp. $2.50.

The author believes that eliminating the name "politics" will not alter the processes known by that term, and that it is urgent that the development of social and political science keep pace with modern thought and practice. He does not suggest any specific type of political organization, but advocates intelligent planning in the evolution of the forms of governmental structure. He discusses the history of political thinking, the relation of politics to psychology, the statistical method of political inquiry, politics in relation to inheritance and environment, and the teachings of experience and reflection regarding political problems. There is a very definite and valuable chapter on "The Next Step in the Organization of Municipal Research," and the volume closes with a broad, inspiring view of the tendency of politics that leaves the reader hopeful for the more general use of intelligence in the political affairs of the future.

A Graphic Table Combining Logarithms and Anti-Logarithms.—By Adrien LaCroix and Charles L. Ragot. The Macmillan Company, New York. 1925. 60 pp. $1.40 postpaid.

This very complete and handy volume gives directly, without any interpolation, the logarithms of all five-place figures to five places and the numbers to five places, corresponding to all five-place logarithms, as well as a graphic table similar to the five-place table reading to only four places. The simplicity and clarity of the pages makes them very easy to use and will speed up logarithmic computations without reducing the accuracy of the work in any degree.

The Custody of State Funds.—By Martin L. Faust. Published by the National Institute of Public Administration, 261 Broadway, New York, N. Y. 1925. 178 pp. $2.00.

The author of this book is a member of the faculty of the University of Pittsburgh. His treatment of the subject is under the following outline: Part I, General Discussion of the Custody of State Funds, with five chapters—The Importance of the Subject of Custody, Provisions for the Safekeeping of State Funds, Economical Handling of Treasury Balances, Investment and Management of Funds, Summary of Present Depository Practices; Part II, with three chapters covering the details of the development of the depository systems of Pennsylvania, Ohio and Illinois. The appendices give a Digest of State Laws on Custody of Funds, and statements of State Moneys Lost or Tied Up in Defunct Banks, and Interest Received on State Deposits.

A Novel Cooling Pond.—By E. J. Rowe, Superintendent, Water and Light Department, Wellsville, N. Y. Reprinted from the *Journal* of the American Water Works Association for June, 1925. 3 pp. Illustrated. Showing how the author found a way to eliminate the necessity of ice removal from the uncovered sedimentation basin of the Wellsville filtration plant. (Apply to the author.)

Construction Plant, Methods and Costs.—By Charles H. Paul, Chief Engineer, The Miami Conservancy District, Dayton, Ohio. Published by the Miami Conservancy District. 1925. XXVII+411 pp. Diagrams, illustrations, and tables. $2.00.

This paper-bound volume is the tenth and last of a series of reports issued in connection with the planning and execution of the vast system of flood-control work built by the Miami Conservancy District, which was brought into being because of the great flood of March, 1913, in which 360 lives were lost and more than $100,000,000 worth of property destroyed. This volume presents a record of the methods and plants used to carry out the work, together with such cost figures as are pertinent. Following this is a general description of the construction plants used on the various units of the project, together with the reasons for selecting each of the more important items. A complete list of equipment is given for each unit, and the cost of each item. There is included also the cost of installation and dismantling and the total investment in plant for each job. Construction methods and results have been discussed for the more important articles of work, or for any work that was of an unusual character, and the costs of the various classifications of work have been set down and analyzed.

Much of the material has been obtained from the final reports and other memoranda of the division engineers and others in charge of the various units of the work. The cost records given include, except where specifically noted, all proper charges to the work, such as distribution of shop operation, garage and warehouse charges and other similar costs which are not direct charges against any one item of work. Throughout the volume, cost and performance records have been selected to illustrate average, all-the-year-round results rather than unusual records. Enough "maximum performance" and "least cost" data have been given to show what can be done under favorable conditions, but the author has desired to emphasize the fact that it is the average every-day performance that counts in the long run, and estimates on new work should be based on such performance rather than on unusually favorable past records.

The Administration of Real Estate Boards.—By Herbert U. Nelson, Secretary, National Association of Real Estate Boards. The Macmillan Company, New York. 1925. IX + pp. $3.50.

This is Volume VI in the Standard Course in Real Estate, outlined by the Joint Commission representing the National Association of Real Estate Boards, the United Y. M. C. A. Schools, and the Institute for Research in Land Economics and Public Utilities, edited by Richard T. Ely, LL. D., Director of the Institute, and Professor of Economics in the University of Wisconsin. The author's purpose is to state briefly the practices and customs by which the Realtors of America are endeavoring to improve, through real estate boards, the conditions of their profession and the communities in which they live.

Social Pathology.—By Stuart Alfred Queen, Ph. D., and Delbert Martin Mann, A. M., Department of Sociology, University of Kansas. Crowell's Social Science Series, edited by Seba Eldridge, Department of Sociology, University of Kansas. Thomas Y. Crowell Company, New York. 1925. XXI+690 pp. $3.50.

A college text-book which presents certain human situations as problems to be dealt with from the standpoint of sociology, with the idea of helping students to understand what happens when body or mind breaks down and what causes these crises. It is not designed mainly to present policies of prevention or cure, but to stimulate intelligent thinking that will lead later to specialized and technical study in neighborhood and community work, criminology, child care, and the organization of social work. In this analytical study, the physical, mental, economic, and social factors of the various problems are pointed out, and the students are taught how to get information for themselves and how to interpret it and present it to others.

Causal Factors in Infant Mortality.—By Robert Morse Woodbury, Ph. D., Director of Statistical Research in the U. S. Children's Bureau. A statistical study based on investigations in eight cities. Bureau Publication No. 142. 1925. 245 pp. Charts, tables. (Apply to Government Printing Office, Washington, D. C.)

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The Linn Tractor is a heavy-duty, heavy-hauling machine which will give you long, hard service with minimum wear.

The body can be loaded. This gives the tractor the necessary traction to push deep snow from the road.

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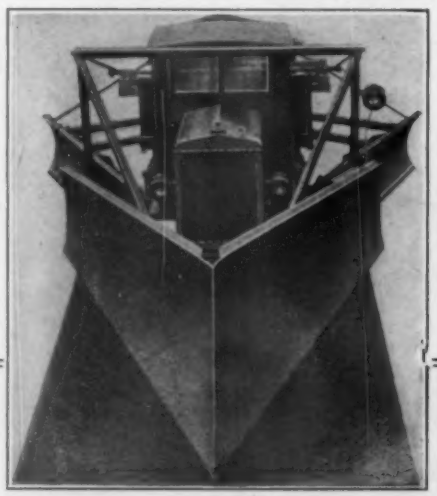

Front view of Linn Tractor and Snow Plow showing the square point of the plow, designed to lift the snow from the road, after which it is broken or separated by its "V" construction and moved to either side by the wings, leaving an 18-foot road behind.

Singing Games and Drills.—Prepared by Chester Geppert Marsh, Director, Westchester (N. Y.) Recreation Commission. A. S. Barnes and Company, New York. 1925. IX+162 pp. Illustrated. $2.00.

This book provides a program of games, action stories and calisthenic drills for rural schools, playground teachers, and teachers where there is no graded system of physical education. The material is arranged in groups of three—a singing game, an action story, and a running game, for the purpose of giving each week a new developmental exercise of each type.

The Problem Child in School.—By Mary B. Sayles. Published by the Joint Committee on Methods of Preventing Delinquency, New York. 1925. 287 pp. $1.00.

This volume includes also a description of the purposes and scope of visiting teacher work, by Howard W. Nudd. The narratives from case records of visiting teachers are of absorbing interest, each being told in a constructive spirit, not that of the ordinary survey of morbid conditions. The books is really inspirational and gives courage to those who are deeply concerned in getting to the root causes of abnormal conduct and in applying the right remedy, administered with intelligence, sympathetic understanding, firmness, and faith. A great variety of situations in regard to scholarship and conduct are presented to the new specialist in modern education—the visiting teacher, who cooperates fully with school teachers and parents. A valuable book, not only for students of sociology, psychology, and education, but for general readers interested in dealing wisely with the maladjustments of life.

Santa Barbara Earthquake Number of the Bulletin of the Allied Architects Association of Los Angeles, Calif.—August 1, 1925. This issue is devoted to the investigations of the effect of the earthquake by members of the Association and by widely known experts on seismology, geology, and construction methods. 32 quarto pp. The views expressed are those held by the individual writers, and no attempt has been made to bring the opinions to a common conclusion. (Apply to S. P. Trood, Director of Publicity, Allied Architects Association, 130 South Broadway, Los Angeles, Calif.)

Editors' Reference Book on Cement and Concrete.—Facts and Figures About Streets and Roads, Public Improvements, Cement Industry, Construction. 1925 edition. 56 pp. Illustrated. Containing ready reference tables on road mileages, highway maintenance costs, etc., with other data for reference by writers. Published by the Portland Cement Association, 111 West Washington Street, Chicago, Ill. (Apply to publishers.)

The Subway Contracts—What They Are and Who Put Them Over—How the City Is Affected by Them, and the Remedy.—By Cornelius M. Sheehan, President, City Government League, New York City. 24 pp. of questions and answers. (Apply to Leo Kenneth Meyer, Director of the League, 8 Adelphi Place, Brooklyn, N. Y.)

A Study of Women in Clerical and Secretarial Work in Minneapolis, Minn.—M. C. Elmer, Director of the Study, Associate Professor of Sociology, University of Minnesota. 42 pp. Charts, tables. This work was done for the Woman's Occupational Bureau, 216 Meyers Arcade, Minneapolis, Minn., of which Mildred Rosenstiel is Manager. The committee sponsoring the study was made up of representatives of all the prominent women's organizations in the city. The study answers questions regarding required training, types of persons employed in the field, promotional opportunities, salaries, and actual openings. (Apply to the Bureau.)

Industrial Survey of Jasper, Ala.—Compiled, edited and arranged for the Jasper Commercial Club by Morris A. Bealle, Secretary-Manager. Handy size, 28 pp. Illustrated. A presentation of the natural advantages and the industrial, commercial, and social facilities of Jasper. (Apply to the Club.)

Museums Passive and Active.—By Edward K. Putnam, Acting Director, Davenport Academy of Sciences Museum, Davenport, Iowa. A paper read before the Contemporary Club, Davenport, April 13, 1925. An interesting and practical handling of the subject of making a museum an actively functioning means of the "increase and diffusion of knowedge," in contrast to the dry, dusty, futile museum of yesterday. 14 pp. (Apply to the Contemporary Club, Davenport, Iowa.) Secretary of the Conference, Albany, N. Y.)

Water-Supply, New York City.—Nineteenth Annual Report of the Board of Water-Supply of the City of New York, Accompanied by Report of the Chief Engineer. January 1, 1925. 194 pp. with many folding inserts containing a large amount of tabular material. Illustrated. An important report. (Apply to Thaddeus Merriman, Chief Engineer of the Board, New York, N. Y.)

The Construction and Control of Buildings and the Development of Urban Areas in the United States of America.—Report by G. Topham Forrest, F. I. B. A., F. R. S. E., F. G. S., Architect to the London County Council. An elaborate, large-size report of 109 pp. Maps, drawings, plans. The result of the author's visit of two months, in 1924, in the cities of Washington, New York, Chicago, Philadelphia, Pittsburgh, Boston, and Buffalo. The subject is dealt with under the following heads: General Building Regulations; Building Control as Regards Means of Escape in Case of Fire; Concrete, Reinforced Concrete and Steel Frame Construction; Town Planning and Zoning; State and City Art Commissions; Housing; Educational Buildings. Recommendations for the Council's consideration are made in the respective sections and are summarized in the final chapter. A report of great interest on both sides of the water. 5 shillings. (Apply to P. S. King and Son, Limited, 2 and 4, Great Smith Street, Victoria Street, Westminster, S. W. 1, London, England.)

Some Specific Factors Responsible for Pollution or Affecting Analyses of Water Supplies.—Material originally presented to the subcommittee on field surveys of the Advisory Committee on Official Water Standards of the United States Public Health Service, on July 8, 1922, by H. A. Whittaker, Director of the Division of Sanitation of the Minnesota State Board of Health. The list is of interest to persons engaged in the sanitary supervision of water-supplies. Reprint No. 972 from the Public Health Reports, November 7, 1924. 5 cents. (Apply to Government Printing Office, Washington, D. C.)

Permanent Charity Fund, Boston, Mass.—Eighth Year Book Covering the Activities of Committee of the Permanent Charity Fund Incorporated, July 1, 1924-June 30, 1925. 37 pp. Containing reports of the officers, with information about the establishment of the Fund, its purposes, and how gifts may be made to it, also a list of the organizations to which appropriations were made during the year, with a brief statement of the work carried on by each organization. (Apply to Charles M. Rogerson, Secretary of the Committee, 53 State Street, Boston, Mass.)

Hospitals and Health Agencies of Louisville, Ky., 1924.—A survey by Haven Emerson, M. D., and Anna C. Phillips, made for the Health and Hospital Survey Committee of the Louisville Community Chest, 658 South Fourth Avenue, Louisville, Ky. 174 pp. Charts. Including a series of recommendations representing a practical program for safeguarding and caring for the sick, which it is within the scope of influence and resources of the Community Chest to accomplish. (Apply to David C. Liggett, Director of the Community Chest.)

Suggested Tests for Female Playground Supervisor.—In the August, 1925, issue of *Public Personnel Studies*, published by the Bureau of Public Personnel Administration, 26 Jackson Place, Washington, D. C. 11 quarto pp. The tests given are suggested for use in the selection of a woman to take charge of all the activities of a playground, whether she is to work alone or to have an assistant. 35 cents. (Apply to the publishers.)

The Saint Louis Traffic Problem.—A report by the Traffic Committee of the Building Owners' and Managers' Association of Saint Louis upon its survey of the traffic congestion problem of the Loop District. April 14, 1925. 24 pp. Views, map, diagrams, tables. Among the recommendations are the following: more traffic officers to handle the situation, with more cooperation for the Police Department from the judges of the police and criminal courts in dealing with traffic violators; the speeding-up of street-widening projects; and an educational campaign on traffic control. (Apply to L. V. Conrath, Secretary of the Association.)

Report on a Proposed Retirement Plan for Employees of the City of Baltimore.—Prepared by the Baltimore Retirement Commission, 1925. 70 pp. A summary of the main provisions is followed by a discussion of the cost of the adoption of the plan, and the third section gives the reasons leading to the recommendations of the Commission. The appendix gives the text of an ordinance to establish the system. (Apply to the Commission.)

Directories of Social Agencies.—The August, 1925, issue of the *Bulletin* of The Russell Sage Foundation Library, 130 East 22nd Street, New York, N. Y. A compilation of directories on file in the Library, stating whether the directory, in each case, is issued annually or occasionally. Covering general agencies and such special agencies as churches, clinics and dispensaries, community chests, convalescent homes and day nurseries, institutions for defectives, delinquents, and dependents, education, family social work, health, labor, recreation, etc. 8 pp. 20 cents. (Apply to Frederick Warren Jenkins, Librarian.)

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....

City **County** **State**

The Schools of Your City.—Revised editions of two pamphlets issued by the Education Service Bureau of the Civic Development Department of the Chamber of Commerce of the United States of America, Washington, D. C. Nos. II and III respectively of a series of five pamphlets on the general subject of city schools. School Buildings and Equipment; 22 pp., with enclosed statistical chart blank; designed to aid members of chambers of commerce in learning the facts as to the schools in which the children of their community receive the training designed to make them more effective workers and citizens. Health and Physical Education; 18 pp.; showing how a community may learn whether it is going forward or backward in the health service of the public schools. (Apply to Edgar F. Fowler, Chief of the Education Service Bureau.)

Infant Mortality in Michigan According to Age Groups: Causes and Methods of Prevention.—By Lillian R. Smith, M. D., Michigan Department of Health. 10 pp. in the July, 1925, issue of *Public Health*, published monthly by the Michigan Department of Health. 3 charts. (Apply to R. M. Olin, M. D., Commissioner, Michigan Department of Health, Lansing, Mich.)

The Proposed Memorial Hall and Civic Center, Detroit, Mich.—A mimeographed memorandum submitted to the special committee composed of the Committees on Ways and Means and Public Buildings of the Wayne County Board of Supervisors. Issued by the Detroit Bureau of Governmental Research, July, 1925. 15 pp.

Report of the American Committee on Highway Transport.—Published by the American Section of the International Chamber of Commerce, Washington, D. C. 55 pp. Submitted to the American Section as the American contribution to the discussion of Highway Transport at the Third General Meeting of the International Chamber, at Brussels, Belgium, June 21-27, 1925. Summarizing the experience of the United States in this field and setting forth the methods which have been devised to facilitate and extend this new form of individual transportation, in the hope of helping other member countries to avoid the mistakes of the pioneering period. (Apply to the publishers.)

City Problems, 1925.—Proceedings of the Sixteenth Annual Meeting of the Conference of Mayors and Other Municipal Officials of the State of New York, held in Syracuse, N. Y., June 2, 3 and 4, 1925. 151 pp. Reports and important information on the various phases of municipal administration and welfare in New York State. $1.25. (Apply to William P. Capes, Executive Secretary, Albany, N. Y.)

Sprinkler Legislation in the United States.—A review based on data compiled by Ira G. Hoagland, Secretary, National Automatic Sprinkler Association. Reprinted from the January, 1925, issue of the *Quarterly* of the National Fire Protection Association, 40 Central Street, Boston, Mass. 15 pp. Illustrated. A digest, with general comment, of a compendium of requirements for automatic sprinkler protection found in building codes and fire protection legislation in the United States, compiled by the National Automatic Sprinkler Association. The compendium quotes from 138 city ordinances and 12 state laws. (Apply to the National Fire Protection Association.)

The City Book of Houston, Texas. 1925.—A survey of the city administration, an analysis of the Port of Houston, a historical sketch of Houston, and a brief outline of the activities of the various city departments. Edited by Norman Henry Beard. An elaborate and interesting report. 188 pp. Many illustrations. (Apply to W. A. Moore, City Secretary.)

A Good Driver.—By Robbins B. Stoekel, Commissioner, Connecticut State Department of Motor Vehicles. Department Bulletin No. 22, August 15, 1925. 4 pp. What the good driver of a motor vehicle does *not* do. An instructive explanation—much better than the ordinary list of "Don'ts." (Apply to the author.)

Assembly of Civil Service Commissions.—Proceedings of Eighteenth Annual Meeting of the Assembly, held in Los Angeles, Calif., May 26-29, 1925. 136 pp., with folding map showing the important jurisdictions in the United States and Canada operating under civil service laws. Illustrated. Interesting discussions, of value in increasing public knowledge of the merit system. (Apply to Charles S. Shaughnessy, Chief Examiner, Civil Service Commission, Philadelphia, Pa.)

National Thrift Week Year Book and Annual Report, 1925.—Prepared under the direction of the National Thrift Committee, 347 Madison Avenue, New York, N. Y. 19 quarto pp. Illustrated. An inspiring report full of ideas and suggestions which will help to make the next Thrift Week observance more successful than any before. (Apply to the Committee.)

How Good Is Your Town?—Measurement standards for town planning and zoning, industry, education, health, public administration, social service, recreation, the public library, town and country relations, and religion; common factors for making a city a good place in which to live. Publication No. 36 of the Wisconsin Conference of Social Work, University Extension Building, University of Wisconsin, Madison, Wis. A handbook of information on the Wisconsin Better Cities Contest, the object of which was to determine the one best place in the state in which to rear a child. 153 mimeographed pp. (Apply to Aubrey W. Williams, Executive Secretary of the Conference.)

Investigation of the Administration of the Policemen's Annuity and Benefit Fund, Chicago, Ill.—Report by the Committee on Police and Municipal Institutions, Chicago, dated July 13, 1925. 82 quarto pp. in the *Journal* of the Proceedings of the City Council at the regular meeting on July 22, 1925. (Apply to Al. F. Gorman, City Clerk.)

The Public Control of House Rents.—By Marcus Whitman. 19 pp. in *The Journal of Land & Public Utility Economics* for July, 1925. "After all, then, rent control served its purpose reasonably well. While being used, it was improved and developed into a serviceable protective structure which can and perhaps should be used again if the occasion demands." $1.25. (Apply to A. W. Shaw Company, Cass, Huron and Erie Streets, Chicago, Ill.)

Financing Railroad Grade Crossing Elimination.—By William D. Hudson, consulting engineer, St. Louis, Mo. 3 pp. in *Engineering-News-Record*, July 9, 1925, Tenth Avenue and 36th Street, New York, N. Y. Showing the conditions that make elimination desirable and suggesting the classification of grade crossings somewhat in the order of their importance so that elimination may proceed accordingly. The author suggests as a means of financing the work "painlessly and without direct taxation," that the railroads be granted a flat increase in all freight and passenger rates, the resulting revenue to be applied exclusively toward the elimination of grade crossings; he states elsewhere that the direct tax as far as the public is concerned would be infinitesimal. (Apply to *Engineering-News-Record*.)

The State Forests of Pennsylvania.—By R. Y. Stuart, Secretary, Pennsylvania Department of Forests and Waters. Bulletin No. 37 of the Department, Harrisburg, Pa. March, 1925. Pocket size, 34 pp. Illustrated. Giving the history of these forests, their advantages and facilities, and emphasizing the necessity of a sound forest policy. (Apply to the author.)

Fire and Alarm Record.—A blank book for fire departments, giving space for records of all fire-alarm details that practical fire department experience has proved necessary for legal purposes, reports, or historical interest. Published by Fire Service, 225 Fifth Avenue, New York, N. Y. Made of tough and heavy ledger paper, strongly bound, to open flat throughout its thickness; allowing a space 31 inches long and ¾-inch high for each of 1,200 alarms. Standard size, or for 600 alarms, Junior size. $10 and $6 respectively. (Apply to publishers.)

Department of Public Works, Baltimore, Md.—Ordinance No. 450, Creating the Department of Public Works. Prepared by the City Solicitor on recommendation of Mayor Howard W. Jackson's Commission on Efficiency and Economy and approved by the Charter Revision Commission. July 17, 1925. 50 pp. (Apply to the Commission.)

Fire Prevention Committee of Chambers of Commerce.—Prepared by the National Fire Waste Council, Washington, D. C. Pocket size. 19 pp. An outline of the activities of such committees, based upon the combined experiences of local fire prevention committees throughout the entire country. (Apply to the Council.)

Aquariums of the World.—By Ida M. Mellen, Aquarist and Secretary, New York Aquarium. Published in the July-August, 1925, issue of *Parks and Recreation*, from the Report of the Director of the Aquarium at New York, by permission of the New York Zoological Society and the Aquarium officers. 3½ pp., besides a valuable folding table of information regarding the aquariums of the world in 1924. Illustrated. (Apply to *Parks and Recreation*, Rockford, Ill.)

National Fire Protection Association.—Proceedings of the Twenty-ninth Annual Meeting, held in Chicago, May 12-14, 1925. 512 pp. Including all reports, whether or not adopted by the Association, and the discussion thereon. For members only. (Apply to the Association, 40 Central Street, Boston, Mass.)

3 out of every 4 snow plows are "Good Roads"—Why?

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Outside investigators recently checked up in 100 communities. Of 2,181 snow plows, owned by 66 communities, 1,683 were Good Roads Champions! More than 77%! Why? Read the Good Roads superiorities listed below.

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8 Buffer Curb Roller protects scraper edge, as well as curbs, trees, walls, manhole inlets, etc.

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THE AMERICAN CITY

Street **Name Map, Clarksburg, W. Va.**—An official street name map of Clarksburg, folded to make 16 pp. and presenting on the back of the map a symposium, "Our City Government," published by members of the Service Clubs of Clarksburg, giving comment on changes brought about by four years of operation under the city manager plan in that city; 15,000 of these maps were printed for use by the Rotary, Kiwanis, and Lions Clubs at conventions, by the Chamber of Commerce and the city government, including a house-to-house distribution. (Apply to Harrison G. Otis, City Manager.)

The United States Arbitration Law and its Application.—Published by The Arbitration Foundation, Inc., 65 Liberty Street, New York, N. Y. 28 pp. Containing the United States Arbitration Law, which will become effective January 1, 1926, with an explanation of it, and including a suggested arbitration clause for use under federal or state laws. (Apply to Albert St. Peter, Executive Director of the Foundation.)

Road Law Procedure in the State of Indiana.—By Ethan L. Arnold. A paper presented at the Eleventh Annual Road School, held at Purdue University January 19-23, 1925. Circular No. 7 of the Engineering Extension Service, Purdue University, Lafayette, Ind. February, 1925. 23 pp. (Apply to the Engineering Extension Service.)

Reports Received

BUFFALO, N. Y.—Annual Report, Department of Health, 1924

CHICAGO, ILL.—Annual Report, Board of Supervising Engineers, Chicago Traction, year ending January 31, 1925

CHICAGO, ILL.—Annual Report, Police Department, 1924

FALL RIVER, MASS.—Annual Report, Board of Health, 1924

HANNIBAL, MO.—Annual Report, Auditor, year ending May 31, 1925

KENOSHA, WIS.—Annual Report of City, 1924

MONTCLAIR, N. J.—Annual Report, Board of Health, 1924

NEWARK, N. J.—Annual Report, Department of Health, 1924

NEWARK, N. J.—Annual Report, Auditor of Accounts, 1924

NEW ORLEANS, LA.—Semi-annual Report, Sewerage and Water Board, 1924

ONTARIO, CAN.—Annual Report, Hydro-Electric Power Commission, 1924

SALEM, MASS.—Annual Report, Park Department, 1924.

SEATTLE, WASH.—Annual Report, Department of Lighting, 1924

On the Calendar of Conventions

SEPTEMBER 29-OCTOBER 9.—LOUISVILLE, KY.

International Association of Fire Engineers. Annual convention. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 5-6.—BOSTON, MASS.

Massachusetts Federation of Planning Boards. Twelfth Annual Conference on City Planning. Executive Secretary, Edward T. Hartman, 37 State House, Boston, Mass.

OCTOBER 5-10.—ASHEVILLE, N. C.

Playground and Recreation Association of America. Annual Recreation Congress. Secretary, H. S. Braucher, 315 Fourth Avenue, New York, N. Y.

OCTOBER 8-9.—CHICAGO, ILL.

Illinois Chamber of Commerce. Annual meeting. General Secretary, Harvey T. Hill, 10 South La Salle Street, Chicago, Ill.

OCTOBER 12-15.—ST. LOUIS, MO.

American Red Cross. Annual convention. Secretary, Mabel T. Boardman, National Headquarters, Washington, D. C.

OCTOBER 12-15.—TULSA, OKLA.

Southwest Water Works Association. Annual meeting. Secretary, R. D. Morgan, Mexia, Tex.

OCTOBER 13-14.—WINCHESTER, VA.

Pennsylvania Commercial Secretaries' Association. Annual convention. Secretary-Treasurer, Donald J. Howard, Chamber of Commerce, Altoona, Pa.

OCTOBER 13-14.—WINCHESTER, VA.

League of Virginia Municipalities. Annual convention. Secretary, Morton L. Wallerstein, 408 Travelers Building, Richmond, Va.

OCTOBER 14-15.—HARRISBURG, PA.

Pennsylvania State Chamber of Commerce. Annual meeting. Secretary, George E. Foss, State Chamber of Commerce Building, Harrisburg, Pa.

OCTOBER 14-16.—MONTREAL, QUE.

American Society of Civil Engineers. Fall meeting. Secretary, George T. Seabury, 33 West 39th Street, New York, N. Y.

OCTOBER 19-22.—ST. LOUIS, MO.

American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York, N. Y.

OCTOBER 21-23,—OTTAWA, KANS.

League of Kansas Municipalities. Annual convention. Secretary, John G. Stutz, Lawrence, Kans.

OCTOBER 22-23.—DAYTON, OHIO

Ohio State Conference on City Planning. Annual meeting. Secretary-Treasurer, Charlotte Rumbold, 201 Chamber of Commerce Building, Cleveland, Ohio.

OCTOBER 26-28.—KANSAS CITY, MO.

National Association of Commercial Organization Secretaries. Annual meeting. Secretary, A. V. Snell, Chamber of Commerce, Pittsburgh, Pa.

OCTOBER 26-29.—DES MOINES, IOWA

American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 1134, Lakeland, Fla.

OCTOBER 27-31.—RICHMOND, VA.

American Country Life Association. Annual meeting. Secretary, Henry Israel, Room 1849, Grand Central Terminal Building, New York, N. Y.

NOVEMBER 5-6.—KINGSTON, ONT.

Ontario Associated Boards of Trade and Chambers of Commerce. Annual meeting. Secretary, T. Marshall, Royal Bank Building, Toronto, Ont.

NOVEMBER 7-14.—JACKSON, MISS.

American Prison Association. Annual Congress. General Secretary, E. R. Cass, 135 East 15th Street, New York, N. Y.

NOVEMBER 9.—NEW ORLEANS, LA.

National Tax Association. Annual meeting. Secretary, Alfred E. Holcomb, 195 Broadway, New York, N. Y.

NOVEMBER 9-14.—SAN FRANCISCO, CALIF.

The All-Western Road Show. Address: Edward R. Bacon, of Edward R. Bacon Company, Folsom, at 17th Street, San Francisco, Calif.

NOVEMBER 17-19.—GRAND RAPIDS, MICH.

International City Managers' Association. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

NOVEMBER 17-19.—PITTSBURGH, PA.

Joint Convention of National Municipal League, American Civic Association, Governmental Research Conference, and National Association of Civic Secretaries.

NOVEMBER 18-19.—ORLANDO, FLA.

Florida League of Municipalities. Annual meeting. Secretary-Treasurer, E. P. Owen, Jr., City Hall, Jacksonville, Fla.

NOVEMBER 23-26.—MIAMI, FLA.

Atlantic Deeper Waterways Association. Annual convention. Secretary-Treasurer, Wilfred H. Schoff, 1405 Widener Building, Philadelphia, Pa.

NOVEMBER 30-DECEMBER 3.—NEW YORK, N. Y.

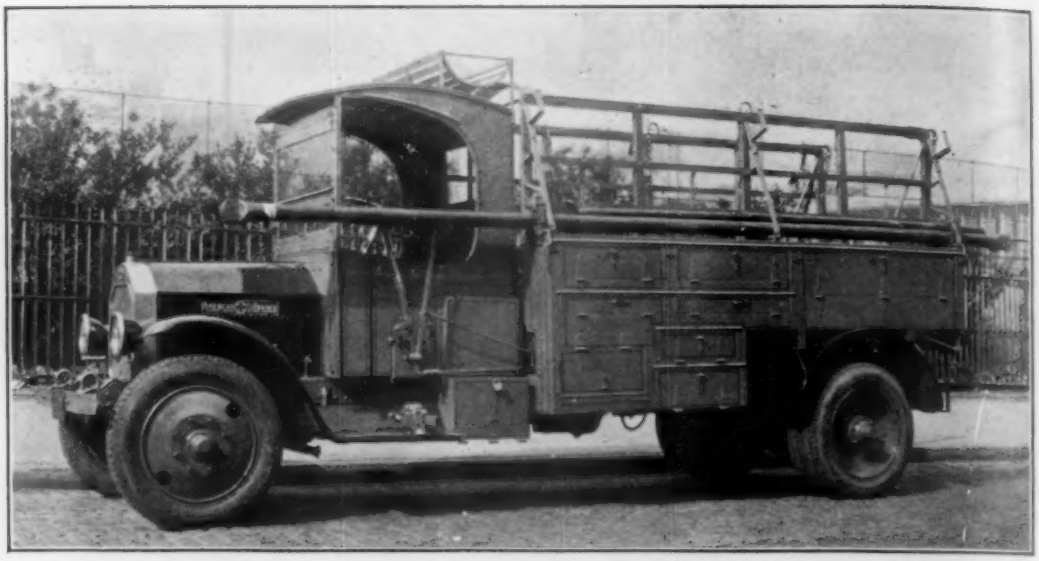
American Society of Mechanical Engineers. Annual meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York, N. Y.

DECEMBER 2-5.—CINCINNATI, OHIO

American Institute of Chemical Engineers. Annual meeting. Secretary, John C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

JANUARY 11-15.—CHICAGO, ILL.

American Road Builders' Association. Annual convention and Road Show. Secretary, Ethel A. Birchland, 37 West 39th Street, New York, N. Y.



Put Trucks on Dual Pneumatics *and Save the Streets!*

ROAD-WRECKERS—the solid-tired wheels of heavy trucks! Hitting the paving 8 times as hard as pneumatics under the same load! Wearing out the road 8 times as fast!

Thirty thousand heavy buses have shown the way out. They ride on Budd-Michelin Dual Wheels and pneumatic tires. They average 15,000 to 20,000 miles from pneumatics—though they give tires the worst punishment of any type of service.

And now trucks are switching to Dual Pneumatics to save loads and save *roads*. One-eighth the pounding on the pavement.

Any city can set a good example by putting municipal trucks on Budd-Michelin Duals—2 double wheels in the rear, 2 singles in front, 1 spare. All interchangeable. All regular size tires, obtainable anywhere!

Your present trucks can be converted to Duals. New trucks, Dual-equipped, can be had from any truck manufacturer. For Ford Trucks, too!

Ask bus operators or truck dealers—or write us direct.

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Philadelphia

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

New Portable Pump Eliminates One Power-Plant

A new portable pump which appeals to prospective pump purchasers as well as to present users of pump equipment, has been developed by the combined activity of the Jaeger Portable Machinery Company, Detroit, Mich., and the Gould Pump Company. When there is an emergency pumping operation, it is usually necessary to employ motive power of some sort to take any pump to the job, and the old-style pump required still another means of power to operate it. With the new Jaeger pump, one power-plant is eliminated, for you use the same power to operate the pump that is used for transportation, as the pump is firmly attached to the front of your Ford car or truck.

The features of the new Jaeger pump are low motor speed, giving the most efficient pump speed; and easy installation, requiring only a half-hour for first fitting and one minute thereafter, and it is not necessary to remove the radiator. The pump is properly suspended in a simple yet strong manner, and it can be left on the car and driven continuously, if desired. The pump will handle a suction lift up to 24 feet and deliver 9,000 gallons per hour. It will deliver 160 gallons per minute against a 90-foot head and will throw a stream from a ⅞-inch nozzle approximately 100 feet. The pump will more than double a 45-pound hydrant pressure, throwing a ⅞-inch stream from 125 to 175 feet. The pump has a positive priming device which will prime 20 feet of 2½-inch suction hose in 40 seconds. If desired, the pump can be driven by a separate motor, either gas or electric.

For cities, the Jaeger pumper is adaptable to all calls for a pump by the department of public works and is an invaluable aid to the fire department, as it will pump any liquid, even heavy sewage. Another extensive use of the Jaeger pumper is by public service companies, as it is particularly adapted to their type of emergency work. It can be carried on the front of a Ford or may be installed in one minute after arriving on the job. Then it can work all day long pumping out underground lines or manholes, whatever the occasion demands, without any injury to the motor. For contractors, it is ideal for ditch draining, pumping out footings, basements, etc., for after a heavy rain the Jaeger can be out on the job and pumping before the old-style, bulky equipment is loaded on the truck. For small towns and rural communities, it makes an ideal unit for flushing and sprinkling, as by the addition of the Jaeger pumper to a one-ton Ford truck carrying a tank, a complete power street flusher and sprinkling outfit can be had at moderate cost, all operating from the same power-plant. The Jaeger will fill the tank and then distribute the contents under any pressure required.

JAEGER PUMPER ON FORD RUNABOUT FOR FIRE SERVICE

New Stockland Distributors

The Stockland Road Machinery Company, Minneapolis, Minn., has announced the appointment of the Illinois Equipment Company, with headquarters at Bloomington, Ill., to handle Stockland road machinery in central Illinois. The Illinois Equipment Company maintains branch sales offices at Springfield, Decatur, and Danville under the supervision of S. W. Bodman, Sales Manager, with headquarters at Bloomington.

New Full-Crawler Distributor

The Full-Crawler Company, 500 Clinton Street, Milwaukee, Wis., has announced the appointment of the Monarch Equipment Company, St. Louis, Mo., as its distributor in the St. Louis Branch territory of the Ford Motor Company. The Monarch Equipment Company will carry a complete stock of Trackson Full-Crawler treads for Fordson tractors, as well as repair parts.

Ideal Power Lawn Mower Company Shifts Personnel

The Ideal Power Lawn Mower Company, Lansing, Mich., has announced that Joe M. Egloff, who has been traveling representative in the Ohio and Indiana territory for several years, has been transferred to the Chicago office and has taken charge there as branch manager. P. J. de Feyter, the former branch manager, has been transferred to the sales department and will cover considerable territory in the Central West and South as a general field man.

The Rise of the small town

WHAT brings new people to the smaller towns? *Good roads!* What takes to market the goods they manufacture and the crops they grow? *Good roads!*

And because "Caterpillar" Tractors are so efficient and dependable in supplying power for road building there is today no excuse for bad roads!

CATERPILLAR TRACTOR CO.

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TYPICAL STEEL STRUCTURE TREATED WITH SUBOX

A Remarkable New Lead Paint

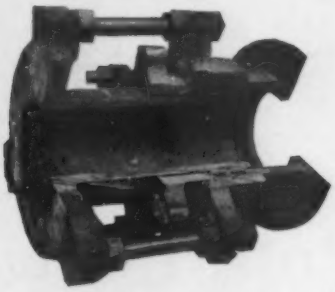
An important advance in rust-proofing compounds has apparently been made by Subox, Inc., 874 Broadway, New York City, in the production of a permanent lead coating which may be applied to metals, wood, stone, wall-board or roofing materials to protect them completely against the inroads of rust or weathering.

This material, which is a colloidal suspension of electrolytically reduced lead in linseed oil and which is dark gray in color, has been found to chemically remove rust and, because of its electrochemical action, to prevent any further formation of rust on iron or steel. The paint is very supple and adhesive and will not chip or peel off, but actually seems to impregnate the material for a short distance from the surface. This material is a Swiss invention which is now being used commercially all over continental Europe, particularly in the protection of metallic structures and in plants where chemical fumes and vapors or excessive dampness and condensation have to be contended with, and should be an excellent protection for concrete in contact with sewage, alkalies, or other deleterious materials. It is also used on stakes and poles of wood to prevent the rotting of those sections in the ground.

When immersed in an electrolytic solution, a surface painted with Subox acts as an insulating layer, so that with a tension as high as 110 volts a satisfactory protection from electrolytic compositions can be established, according to Professor Dr. F. Mayer of Munich. The Swiss Federal Railroads found that Subox, after an exposure of 48 hours to the action of a 5-per-cent solution of sulphuric acid, indicated no change.

Slip Joints Make Setting of Large Meters Easy

Crispin slip joints made by the Multiplex Manufacturing Company, Berwick, Pa., are used to advantage wherever any water-works fixture in a pipe line must be removed and replaced with a minimum of labor, expense, time, and risk to the fixture. They are especially useful in connection with the repair of large meters and in pumping-stations or for filtration plant pipe. To remove the meter or fixture, it is necessary only to unbolt it from the slip joint and from the pipe, loosen



A CRISPIN SLIP-SLEEVE FOR WATER-WORKS FIXTURES

the gland bolts on the slip joint, screw up the draw nut bolts, thus telescoping the slip joint, and lift out the fixture. To attach, the process is reversed, making it a simple, short job.

The slip joints are ruggedly made of the best materials for working pressures of 150 pounds per square inch. A feature of the design makes it practically impossible for the joint to stick fast by corrosion. Bolts fit in quick-acting lugs and cannot turn with the nuts. The first consideration in the design and construction of this joint is convenience and speed with positive action.

An Effective, Low-priced Fire-Boat

The authorities in Seattle, Wash., realized the need of a fire-boat on Lake Washington and Lake Union, both of which are in the heart of the city and the shores of which are lined with house-boats and industrial plants. To effect this fire protection a high-speed runabout motor boat, capable of doing 30 miles an hour, was purchased. It was named the "Port Warden" and equipped with an Evinrude two-cylinder, 4- to 5-horse-power high-pressure pump, made by the Evinrude Motor Company, Milwaukee, Wis.

The pump is installed below the forward deck, easily accessible through a hatch. Two deck plugs for 1½-inch hose furnish the hose attachment. The intake pipe is located below the water-line and is covered by a screen to prevent damage to the pump, which throws an 80-foot stream.

The twin-cylinder pump is of special design, being of the positive gear type with high capacity and endurance. Extra-long bearings furnish freedom from wear or leakage and two grease cups of ample size constitute the complete and simple lubricating system for the pump. The Evinrude two-cylinder engine is equipped with a super-power magneto of the built-in-the-flywheel type and quick starting is assured by the easy starter operated by giving one pull which shoots four

Popular *with the* Railroads

These Railroads Own

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Canadian National
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Union Pacific

INTERNATIONAL Motor Trucks have won the confidence of the great railway systems of the country. Accustomed as they are to buying their hauling units on a cold dollars-and-cents basis, requiring operating economy, long life, and service, they rely on Internationals.

Some of the International-equipped railroads are listed at the left. Leading express companies working close to the railroads—American Railway Express, Canadian National Express, Dominion Express, etc.—use International Trucks. So, also, do hundreds of nationally-known fleet owners.

The International line includes a 2000-lb. Speed Truck and Heavy-Duty Trucks ranging from 3000 to 10,000 lbs. max. caps. International Motor Trucks and Coaches, and McCormick-Deering Industrial Tractors, are sold and serviced through 111 Company-owned branch houses in the United States. Send all inquiries regarding International automotive equipment to this address:

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. of America (Incorporated) Chicago, Ill.

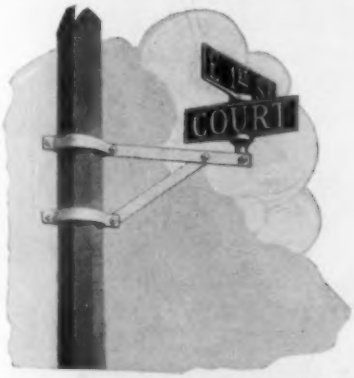
INTERNATIONAL HARVESTER COMPANY
TRUCKS

THE "PORT WARDEN" OF SEATTLE IN ACTION

hot sparks into the cylinder. Standard equipment includes, besides that mentioned above, a float-feed carburetor, pressure gage aluminum base, spark plug hoods, gasoline tank and the necessary tools.

Permanent Street Signs

The proper marking of city streets has become a permanent requirement, and in the past continual buying of street signs was considered necessary in order to have a continuous satisfactory marker service. Cities now want permanency in street signs, the same as in sidewalk, street or other similar improvements. Signs that can be cracked by stones thrown by mischievous boys, signs that will rust and corrode from outside weather exposure, signs that are dependent upon paint for their readability, are not considered permanent. By the use of a special aluminum alloy developed for this purpose, Aluminite street markers, made by



DOUBLE SIGN MOUNTED ON BRACKET

the Standard Manufacturing Company, Cedar Falls, Iowa, are claimed to have more than the required strength and to be really permanent.

The contrast of the natural aluminum finish of the face of the letters and border against the soft-toned, dark background, together with the shadows caused by the raised letters, make these signs very easily read. The fact that the aluminum letter-face reflects the light rays and that the soft, dark background absorbs the light rays is the reason for maximum visibiliy.

THREE-WAY STREET SIGN

While street markers are not primarily intended to withstand the weight of men and boys hanging on them and are not intended to be targets for stones, at times, in spite of ordinances to the contrary, they are subjected to such abuse. The makers of Aluminite markers have designed these signs and built them rugged and strong enough to withstand such improper usage. The plates are carefully cast from aluminum alloy made from all new virgin metal which has been scientifically developed for exclusive use in these signs. No scrap metal of any kind is used, and this alloy positively will not rust or corrode, nor is it affected by outside exposure. The background is finished with several coats of high-grade lacquer, such as is now used on the better automobiles.

Newport Culverts for Mariemont

Much has been written about the town of Mariemont, the ideal city being built near Cincinnati, Ohio, and it has been fully described in THE AMERICAN CITY. This town is one of the largest single enterprises in real estate and home ownership in the country. When fully developed, it will be a city of about 20,000 people. This development includes the building of sewers, streets, administration buildings, business buildings, theaters and homes, as well as churches.

We are advised by W. H. D. Wheat of the Newport Culvert Company, Newport, Ky., that Newport genuine open-hearth iron corrugated culverts are being used exclusively for drainage in Mariemont because of their great strength and long life.

1900 1925

The Mark of Quality

25 Years of

Firestone

Service

to Highway Transportation

25 years of anticipating the requirements of motorists—making manufacturing processes more certain—producing a higher standard of quality — 25 years of unswerving adherence to the Firestone pledge, "Most Miles per Dollar"—summarizes Firestone's record of service to car owners.

Firestone factories have grown from a small building approximately 75 x 150 feet to mammoth plants having floor area of over 60 acres—from a capital of $50,000 to over $50,000,000—from an annual sales volume of $100,000 to over $100,000,000 — all in the short period of 25 years.

This Firestone record could only have been made through furnishing the public with outstanding values and is, consequently, your assurance of quality and lowest prices.

If you would like to know more of this wonderful record, ask your Firestone Dealer to send you an illustrated folder.

With today's high cost of crude rubber and other raw materials, Firestone's opportunity to serve the public was never better, due to its great volume and special advantages in buying, manufacturing and distribution.

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER . . Harvey Firestone

REAR VIEW OF SNOW-MOTOR, SHOWING PROPELLING CYLINDERS WITH SPIRALS

A Snow-Motor for Snow Fighting

A novel dependable unit for snow fighting has been developed in the new Snow-Motor manufactured by Snow Motors, Inc., Detroit, Mich. The Snow-Motor, stripped of its motive power, the Fordson tractor, consists of its motive power, the drums or cylinders to which flanges or spiral runners resembling corkscrews are welded. The object of the torpedo-shaped ends of the drums is to press down the snow and prepare the surface for traction. A differential movement of the two propelling drums, somewhat after the principle used in steering military tanks, accomplishes the locomotion. A man drives a Snow-Motor just as he would an automobile or tractor, using the regular controls. Any standard Fordson tractor can be used on the Snow-Motor by removing the wheels and axles, which can be replaced for summer use.

The most useful function of the Snow-Motor, and, in fact, its chief function, is to break roads in snow, over which automobiles and other contrivances can follow. This machine furnishes a wide track on each side, packs the snow smoothly and makes a very satisfactory surface for auto vehicles. The tread of the Fordson Snow-Motor is fifty-eight inches between the centers of the drums. This outfit will go over the softest snowdrifts and the slickest ice, and no condition of snow has yet been able to stop it.

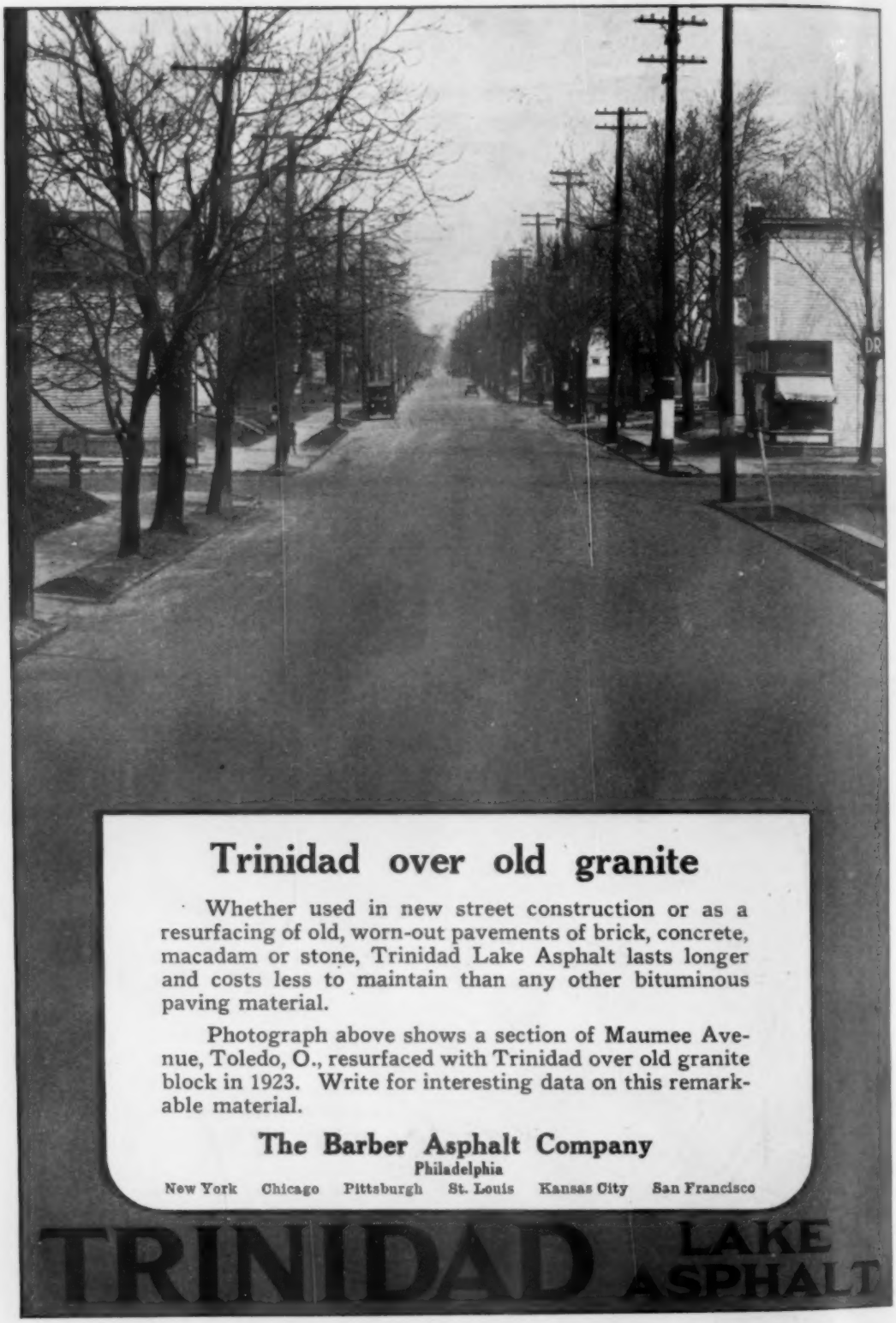
Each year an attempt is made in many states to plow the snow out of the highways to keep traffic open between towns. The Snow-Motor, instead of removing the snow right down to the roadway at once, packs the snow quickly for light vehicles, and after thorough packing the road may be used by heavy vehicles. During a test of the Snow-Motor in the winter of 1924-25, the machine ran at twelve miles an hour on the top of a snow-drift in which a big horse floundered and sank to his neck. In another test it operated on a snow-drift and climbed over the protruding fences with ease. It also broke a road through deep snow over a distance of twenty-five miles from a town to a resort camp and return, making fifty miles of road-breaking without a mishap.

THE SNOW-MOTOR TRAVERSING FIELDS AND FENCES IN DEEP SNOW

American-La France Opens Factory Branch in K. C.

The American-La France Fire Engine Company, Inc., Elmira, N. Y., has announced the opening of a new direct factory branch in Kansas City, Mo., for fire apparatus, commercial trucks and fire department supplies. The decision to open a direct factory branch in Kansas City was reached after careful consideration of the needs of the seventy-one cities operating 234 pieces of American-La France fire apparatus in Iowa, Kansas, Missouri and Nebraska, the states which will be included in the territory of the new branch. The fire apparatus division of the Kansas City, Mo., branch is in the hands of Glenn T. Scott, formerly of the Chicago office, assisted by R. G. Shiffler. The commercial truck division is under the management of W. G. McGlynn and the sundry sales department is in charge of T. A. Miller, formerly of the Pittsburgh and Philadelphia branches.

THE NEW AMERICAN-LAFRANCE DIRECT FACTORY BRANCH AT KANSAS CITY



Trinidad over old granite

Whether used in new street construction or as a resurfacing of old, worn-out pavements of brick, concrete, macadam or stone, Trinidad Lake Asphalt lasts longer and costs less to maintain than any other bituminous paving material.

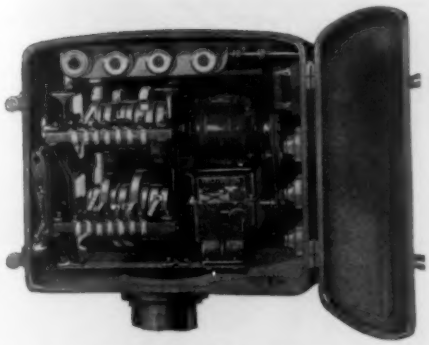
Photograph above shows a section of Maumee Avenue, Toledo, O., resurfaced with Trinidad over old granite block in 1923. Write for interesting data on this remarkable material.

The Barber Asphalt Company

Philadelphia

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

TRINIDAD LAKE ASPHALT



A COMBINED HAND AND MOTOR CONTROL FOR TRAFFIC SIGNALS

Combination Hand and Motor Controls for Traffic Signals

The ever-increasing traffic on streets and highways has brought about the development of automatic signals for the control of traffic and pedestrians and has necessitated the design of a line of automatic devices or timers which flash lights on and off at predetermined periods and which are suitable for this specialized kind of work. Although "stop and go" signals are new, the mechanism which makes them practical is not new, for the flashers made by the Reynolds Electric Company, 2663 West Congress Street, Chicago, Ill., have been in service for 24 years.

The latest Reynolds combination hand- and motor-control unit is mounted in a cast iron cabinet and is furnished complete with switches for night lights, main lines, and throw-over circuits as well as fuse blocks. It has doors front and rear which make it possible for the maintenance man to get at any part of the mechanism. These Reco controls are equipped with a belt tightener to eliminate belt troubles.

In the operation of this unit, by turning the thumb-screw the pointer will move to the left or right, indicating a change of speed on the drum during one-half of its revolution, thus making it possible for an officer in charge of traffic to regulate east-and-west or north-and-south traffic to suit the particular conditions. For example, assuming that the traffic control is set for 30 seconds east and west and 30 seconds north and south, or that one cycle is 60 seconds, the thumb-screw adjustment enables changing to 40 seconds east and west and 20 seconds north and south or any point in between. In other words, it permits a 50 per cent variation faster or slower in either direction. Further adjustment is obtained by a change of contacts and drive pulleys.

Union Metal Opens Chicago Office

The Union Metal Manufacturing Company, Canton, Ohio, has announced the opening of its Chicago district office at 1935 Illinois Merchants Bank Building, Chicago, Ill., in charge of E. M. Peake, District Manager, and F. Thomas Turner, Manager, Street Lighting Department. Mr. Peake has had long executive selling experience in the steel business, and Mr. Turner has been street-lighting specialist for the General Electric Company in the Chicago territory.

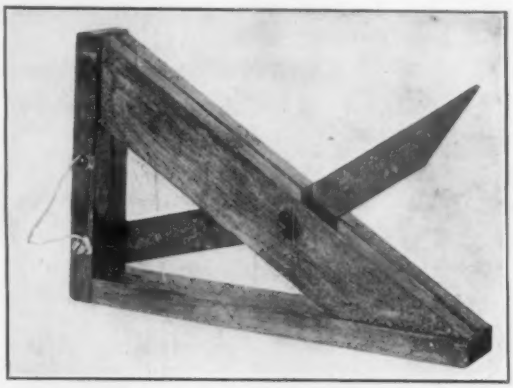
This office will supervise the sale of all Union Metal products, including ornamental street-lighting standards, architectural steel columns, pergolas and rose screens, and metal buildings.

New Device Insures Pressure-tight Sewer Joints

It is the intention of every engineer to have the sanitary sewers he designs water-tight and root-proof. Under dry conditions, it is not a difficult matter, but with water in the trench—and this condition exists in 50 per cent of sewer trenches—it becomes serious, and with cement mortar joints, practically impossible. A simple device is now being made by the G-K Sales Agency, Macungie, Pa., that guarantees a complete joint of G-K compound, top, sides, and bottom to be pressure-tight.

On the bank two lengths of 3-foot pipe or three lengths of 2-foot pipe are joined by standing on end, calking the joints with jute, and pouring the hot compound without the use of a pipe runner. When it is possible for the trench machine to open trench 25 to 30 feet ahead of the pipe layer, the bank sections of 6 feet, when the compound has set, are lowered into the trench as one pipe and set in the saddle of the G-K collapsible form illustrated, 4 to 5 inches above the water-level, and the several connecting joints are made with G-K compound, using asbestos runner.

When these joints have set, the forms are collapsed and the 18 to 24 feet of jointed pipe rolls to the side of the trench. The forms are then removed or turned to the side of the trench, and the jointed sections rolled to the center in alignment, so that the top of the joint becomes the bottom, and should there by any possibility be an opening in what was the bottom, it is quickly discovered and sealed with hot compound. The bell-holes being dug, the whole length of pipe may, by the use of a bar at the end, be thrust into the bell of the pipe of the finished sewer.



NEW FORM TO AID SEWER PIPE LAYING

Barber Asphalt Moves Offices

The Barber Asphalt Company, Philadelphia, Pa., has announced the removal of its offices from 1900 Land Title Building, to 1600 Arch Street, Philadelphia.

When the New Pump Goes on Trial

Pumps are purchased on a performance basis guaranteed by the manufacturer.

The water department properly insists that these guarantees be met through an official test.

On this important day, when each side is closely watching its interests, there is just one device UNIVERSALLY ACCEPTED for the vital service of showing the number of gallons delivered by the pump—

THE VENTURI METER

"VENTURI"—Registered

BUILDERS IRON FOUNDRY

Builders of The Venturi for 34 Years

PROVIDENCE, R. I.

New Spotlight for Traffic Officers

A high-intensity spotlight, designed for the purpose of illuminating traffic officers stationed at street intersections, is one of the latest products of the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. It is arranged for mounting directly above the officer's station, so as to concentrate the light from the unit, illuminating the officer himself and the immediate area around him with a high intensity.

A SPOTLIGHT FOR TRAFFIC OFFICERS

The unit illustrated is made up of a porcelain head with a 1¼-inch canopy and is equipped with a socket for either series or multiple connection. A true parabolic reflector is supported in the proper position by means of a cast iron skirt attached to the porcelain head. A hinged cover with wire glass lense closes the bottom of the unit, making it completely weather-proof and dust-proof.

Camden, N. J., Finances Community Hotel

A triumph of Chamber of Commerce and community cooperation was celebrated in Camden, N. J., the week of September 14 in the opening of the new $1,250,000 community hotel, the Walt Whitman, financed by the Hockenbury System, Ind., Harrisburg, Pa. A total of 1,956 citizens are stockholders in this enterprise and they, with the citizen salesmen and their families, had their day on Wednesday, the 16th, with a viewing of the building and a buffet supper. On Thursday there was a banquet for the public, with Hon. J. Edward Moore as chief speaker. A flag-raising a parade, a picture-unveiling, and receptions and dinners to the directors of the hotel and to the contractors respectively, preceded the other events.

The hotel is an 8-story, 200-room model of efficiency, located on Broadway, Cooper, and Lawrence Streets. The Chamber of Commerce occupies six corner rooms on the mezzanine floor in conformity to the provision of Eldridge R. Johnson, President of the Victor Talking Machine Company, who subscribed $100,000 for stock to be held in trust for the Chamber of Commerce, as well as for $50,000 in his own name. LeRoy A. Goodwin, President of the Community Hotel Corporation, was President of the Chamber of Commerce at the time of the hotel financing. James J. Scott, Vice-President, was General Sales Manager of the financing program, and William Kennedy, Secretary, is Secretary of the Chamber of Commerce, which body has persistently promoted the hotel project to its successful conclusion.

The architects and builders of this hotel are the H. L. Stevens Company of New York and Chicago, and it is to be operated as a unit in the American Hotels Corporation chain, with John W. Taylor as Manager.

Municipal Coal and Gasoline Stations in Lincoln, Nebr.

THE operation of municipal coal and gasoline stations, with the idea of regulating the selling prices of these commodities, is a rather unusual experiment which has been tried with success by the city of Lincoln, Nebr. The coal yard, which is open during the winter months only, has been in operation for several years, and the gasoline station since the latter part of 1924. Each of these undertakings was in turn authorized by charter amendments approved by the voters, and the operation of the stations was placed under the direction of the Commisisoner of Streets of the city.

The object of the City Council in opening these municipal stations was to combat the charging of exorbitant prices by local dealers through offering to the public a fair quality of coal and of gasoline at fair prices. It is not the city's purpose to compete with legitimate dealers asking reasonable rates. This principle is upheld by Mayor Frank C. Zehrung, who has expressed his opinion on the subject as follows:

"Personally, I am not much of a municipal ownership man—never have been—but if it is used to regulate business and allow merchants to make a good living profit, I do not object to it. But I am opposed to the city's going into any business to try to drive legitimate business dealers out of business, because they are the people who pay the taxes and keep up the town."

U. S. PUBLIC HEALTH SERVICE

Frequent inquiries are received at the office of the Surgeon General, asking if the "National Health Service" located in Washington, D. C., has any connection with the Public Health Service or with the Government of the United States. Surgeon General H. S. Cumming desires to announce that the "National Health Service" has no connection whatever with the Public Health Service, and in so far as can be learned, with no branch of the Government.

Make All Cross Streets AND Highways Safe!

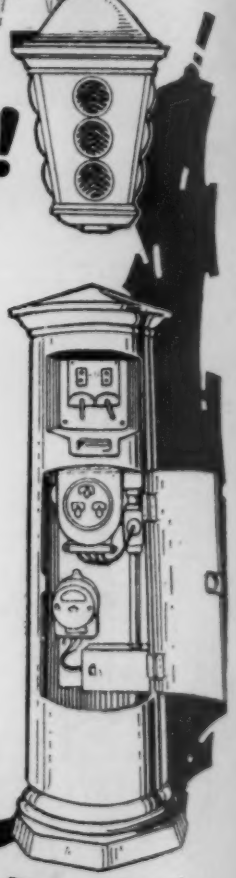
Stop His Worrying!

AND YOURS, TOO--

THE mental strain, the continual thought and fear that "Something Might Happen" at each street corner brings every driver and every city face to face with the most important question of today—"How can streets and highways be made SAFE—for both motorists and pedestrians?"

SIGNAPHORES stand ready to answer this question for you! Let us send you full information how Signaphores—efficiently and economically regulating and controlling all traffic—make your streets SAFE! Write us today!

Tokheim Oil Tank & Pump Co.
Fort Wayne, Ind.
Offices in all principal cities



SIGNAPHORE
STOP AND GO TRAFFIC SIGNALS

(Pronounced—Sig-Na-Fore)